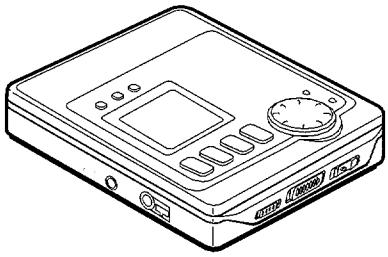
aiwa

aiwa SERVICE

AM-C80
AM-F80



MINIDISC RECORDER

• BASIC MD MECHANISM: ZZG–A R1

• TYPE: C80 (AU), F80 (AHC, AHK, AHR, AK, AEZ)

SERVICE MANUAL

REVISION PUBLISHING

• This Service Manual is the "Revision Publishing" and replaces "Simple Manual" of AM-F80 <AHC, AHK, AHR, AK, AEZ>, (S/M Code No. 09-99A-419-2T2).

S/M Code No. 09–99B–419–2R2

TABLE OF CONTENTS

SPECIFICATIONS 3
PROTECTION OF EYES FROM LASER BEAM DURING SERVICING 4
PRECAUTION TO REPLACE OPTICAL BLOCK 4
DISASSEMBLY INSTRUCTION ..... 5 ~ 6
ELECTRICAL MAIN PARTS LIST ..... 7 ~ 9
TRANSISTOR ILLUSTRATION 9
WIRING – 1 (MAIN : AHK) ..... 10 ~ 12
SCHEMATIC DIAGRAM – 1 (MAIN : AHK) ..... 13 ~ 15
WIRING – 2 (MAIN : AHC, AHR, AK, AEZ, AU) ..... 16 ~ 18
SCHEMATIC DIAGRAM – 2 (MAIN : AHC, AHR, AK, AEZ, AU) ..... 19 ~ 21
IC BLOCK DIAGRAM – 1 ..... 22, 23
SCHEMATIC DIAGRAM – 3 (MECHA / FLEX MECHA / FLEX TACT / LCD1) 24
WIRING – 3 (FLEX MECHA / FLEX EL / FLEX TACT) 25, 26
IC BLOCK DIAGRAM – 2 ..... 27, 28
WIRING – 4 (MECHA) 29
IC BLOCK DIAGRAM – 3 ..... 30, 31
LCD DISPLAY 32
IC DESCRIPTION ..... 33 ~ 40
TEST MODE ..... 41 ~ 46
MECHANICAL EXPLODED VIEW 1 / 1 47
MECHANICAL PARTS LIST 1 / 1 48
MD MECHANISM EXPLODED VIEW 1 / 1 49
MD MECHANISM PARTS LIST 1 / 1 50
ACCESSORIES / PACKAGE LIST 51
REFERENCE NAME LIST 52

SPECIFICATIONS

Main unit

Playback system MiniDisc digital audio system
Laser pickup Semiconductor laser
Recording system Magnetic polarity modulation overwrite system
Revolutions Approx. 400 to 900 rpm (CLV)
Sampling Frequency 44.1 kHz, with built-in sampling frequency rate converter
Number of channels Stereo: 2 channels
Monaural: 1 channel
Modulation system Eight to Fourteen Modulation (EFM)
A/D, D/A converter 1-bit
Frequency response 20 to 20,000 Hz ± 1 dB
Wow and Flutter Below measurable limit (±0.00 1% W.PEAK)

Input

	MIC	LINE	OPT (digital)
Jack type	Stereo mini-jack	Stereo mini-jack	OPTICAL mini-jack
Rated input level	1.1 mV	280 mV	–
Minimum input level	0.4 mV	100 mV	–

Output

	OUTPUT / PHONES
Jack type	Stereo mini-jack
Maximum output level	10 mW + 10 mW
Load impedance	16 ohms

Power requirements DC 3.6 V using the supplied lithium-ion rechargeable battery LIB–902
DC 1.5 V using one LR6 (size AA) dry cell batteries (used together with rechargeable battery)
AC house current using the supplied AC adaptor AC–D401.
Battery life Using the supplied rechargeable battery
Approx. 11.5 hours for playback
Approx. 5 hours for recording
Using the supplied rechargeable battery and one LR6 (size AA) dry cell batteries
Approx. 20 hours for playback
Approx. 7.5 hours for recording
Dimensions Approx. 78.8 (W) X 18.8 (H) X 86.8 (D) mm ($3^1/_8$ X $^3/_4$ X $3^1/_2$ inches)
Weight Approx. 163 g (6 oz) including the rechargeable battery.

AC adaptor (AC–D401)<AHC, AHR>
Output DC 4.5 V
Rated voltage AC 110 – 120 V/220 – 240 V, switchable, 50/60 Hz
AC adaptor (AC–D401)<AHK, AK, AEZ>
Output DC 4.5 V
Rated voltage AC 230 V, 50 Hz
AC adaptor (AC–D401)<AU>
Output DC 4.5 V
Rated voltage AC 120 V, 60 Hz

Suppplied headphones HP–M031 H<AK, AEZ>
Type In-ear type
Impedance 16 ohms
Sensitivity 94 dB/mW

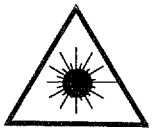
Recommended commerically available headphones<AK, AEZ>
Type In-ear type / Vertical type / Headband type
Impedance 16 ohms
Sensitivity 91 – 99 dB/mW

• Design and specifications are subject to change without notice.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs laser. Therefore, be sure to follow carefully the instructions below when servicing.

WARNING!!
WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION. BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.



- Caution: Invisible laser radiation when open and interlocks defeated avoid exposure to beam.
- Advarsel: Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

VAROITUS!
Laiteen Käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyt-täjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

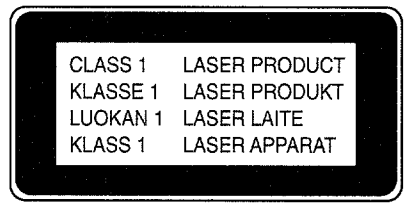
VARNING!
Om apparaten används på annat sätt än vad som specificeras i denna bruksanvising, kan användaren utsättas för osynling laserstrålning, som överskrider gränsen för laserklass 1.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

ATTENTION
L'utilisation de commandes, réglages ou procédures autres que ceux spécifiés peut entraîner une dangereuse exposition aux radiations.

ADVARSEL!
Usynlig laserstråling ved åbning, når sikkerhedsafbrydereer ude af funktion. Undgå udsættelse for stråling.

This Compact Disc player is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the rear exterior.

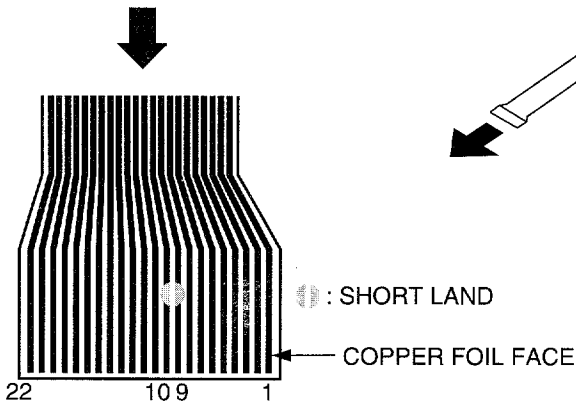


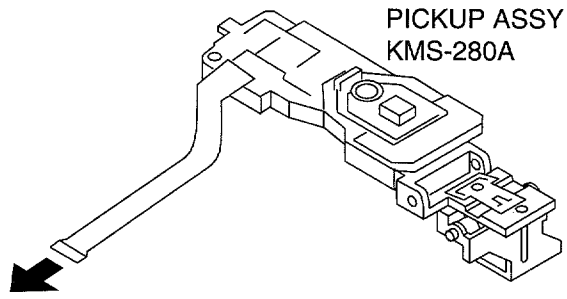
Precaution to replace Optical block

(KMS – 280A)

Body or clothes electrostatic potential could ruin laser diode in the optical block. Be sure ground body and workbench, and use care the clothes do not touch the diode.

1) After the connection, remove solder shown in right figure.

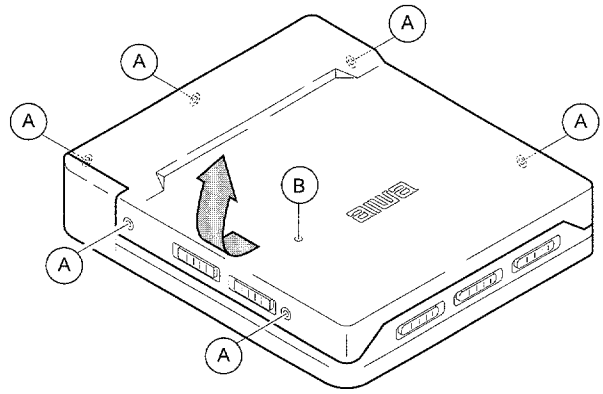




DISASSEMBLY INSTRUCTION

1. Bottom Panel Removal

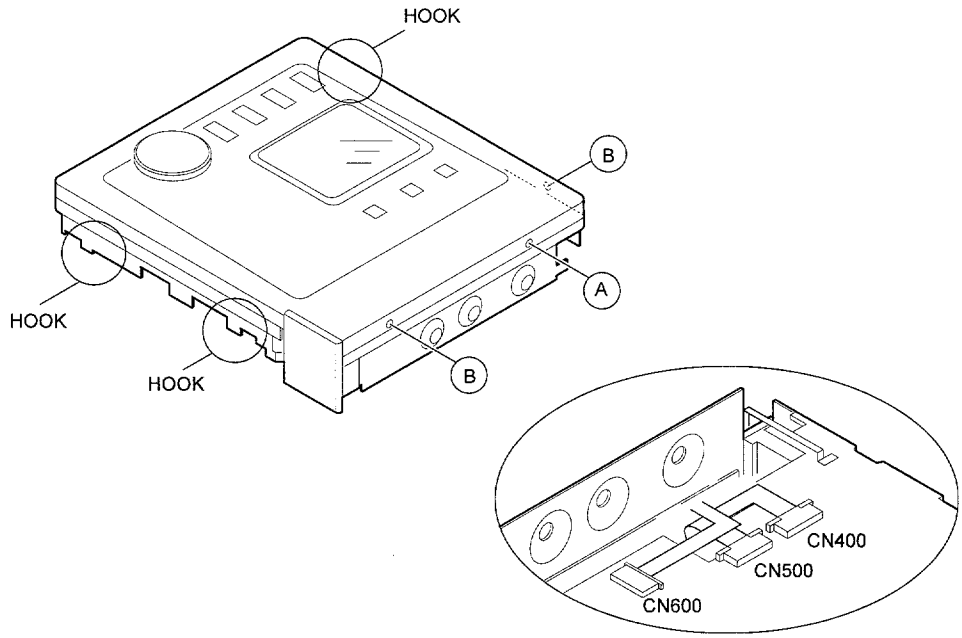
a) Remove 6 screws Ⓐ and 1 screw Ⓑ.
b) Remove the bottom panel in the direction of the arrow.



※ When fit it up together, make sure to align SYNC SW and INPUT SELECT SW.

2. Top Panel Removal

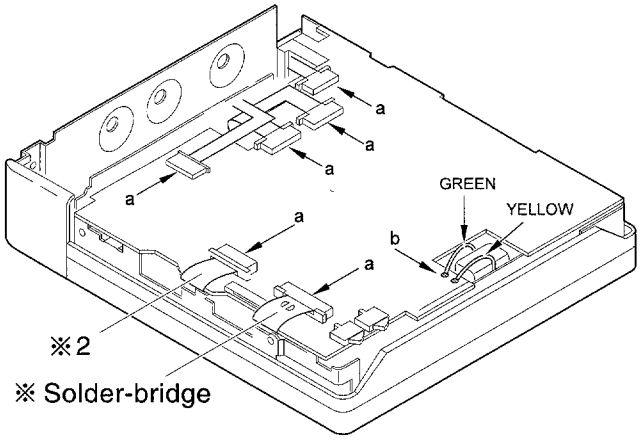
a) Disconnect 3 FFC connectors (CN400, CN500 and CN600).
b) Remove 1 screw Ⓐ and 2 screws Ⓑ.
c) Remove 3 HOOKs.
d) Remove the top panel carefuly so as not to cut FFC of LCD.



3. Main C.B Removal

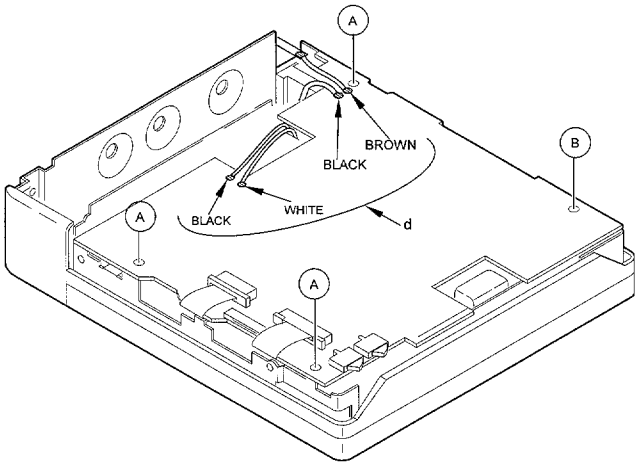
a) Disconnect 6 FFC connectors.
※ Solder-bridge the shortland of LD before removing FFC of Pick-Up.

b) Remove 2 wires of OWH motor.
※ 2. Use double-coated tapes to fixate FFC (that is between the main circuit board and the mechanism circuit board) to the main circuit board.



d) Remove 2 wires from Spindle motor and another 2 wires from the external power supply.

e) Remove 3 screws Ⓐ and 1 screw Ⓑ, then remove the main circuit board.

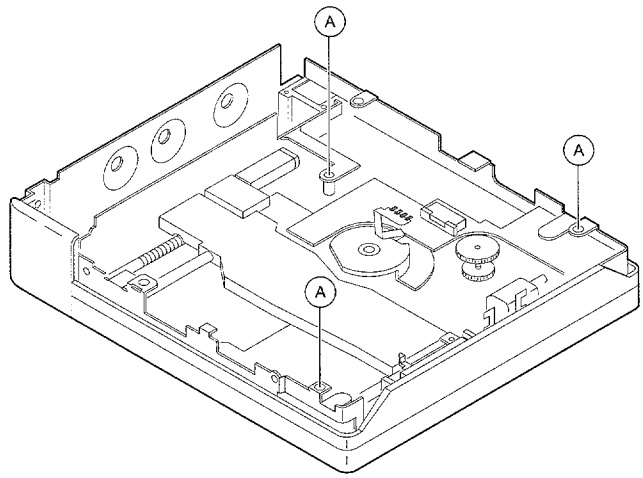


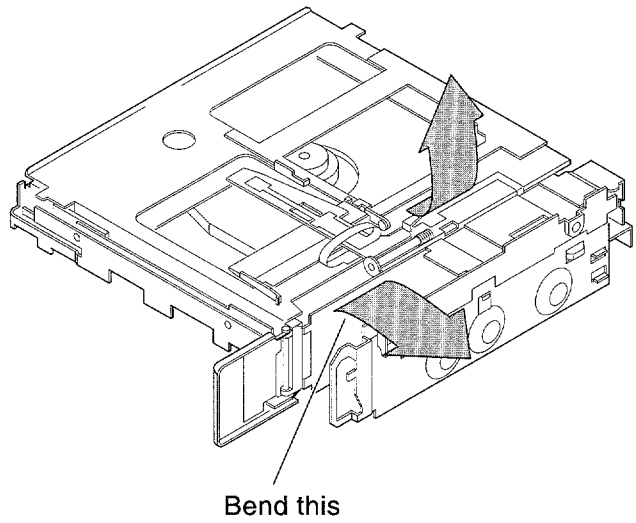
4. Mechanism Assembly Removal

a) Remove rear panel, top panel and the main circuit board.

b) Remove 3 screws Ⓐ.

c) Bend the battery cover and remove the machine in the direction of the arrow.
Do not bend the main frame.





ELECTRICAL MAIN PARTS LIST

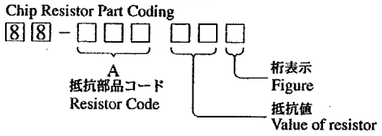
If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
IC			
	87-A20-707-010		C-IC,CXA2523AR
	87-A20-710-040		C-IC,S-8110AMP
	87-A21-349-010		C-IC,CXD2660GA
	87-A21-036-040		C-IC,R1110N251B-TR
	87-A21-461-040		C-IC,RQ5RW18BHA04
	87-A21-027-040		C-IC,TC7W66FU
	8A-HM1-609-010		C-IC,CXP81952M<AHK>
	8A-HM1-609-110		C-IC,CXP81952M-554R<EXCEPT AHK>
	87-A21-030-040		C-IC,S-93C46AMFN
	87-A21-100-040		C-IC,S-3531A
	87-A21-308-040		C-IC,HMMD4425M-L4S<AHK>
	87-A21-460-040		C-IC,SP4425CU<EXCEPT AHK>
	87-A21-548-040		C-IC,MPC17A39L<EXCEPT AHK>
	87-A20-813-040		C-IC,CXA8048N
	87-017-857-080		IC,TC7S04FU
	87-A20-719-040		C-IC,MPC18A20VM
	87-A21-038-040		C-IC,NJU7014R-TE2
	87-A21-081-040		C-IC,NJM2130F
	87-A21-032-080		C-IC,S-8520B28MC
	87-A21-035-040		C-IC,R1110N281B-TR
	87-A20-674-040		C-IC,S-80825ANNP-EDN
	87-A21-102-040		C-IC,S-80828ANNP-EDR-T2
	87-A21-034-040		C-IC,UDA1341TS
	87-A21-029-040		C-IC,BA3577FV
TRANSISTOR			
	89-115-884-080		CHIP -TRANSISTER 2SA1588Y
	87-A30-148-080		C-TR,2SC4738GR
	87-026-644-080		C-TR,DTA144EE
	87-A30-033-080		C-FET,2SK2035
	87-026-536-080		C-TR,RN4910
	87-026-654-080		C-TR,DTC114TE
	89-113-625-080		C-TR,2SA1362GR
	87-026-521-080		CHIP TR HN1C01FU(GR)
	87-A30-150-080		C-FET,MTDF2N06HD
	87-026-645-080		C-TR,DTC144EE
	87-A30-187-080		C-FET,MTDF1N02HD
	87-A30-147-080		C-TR,2SA1832GR
	87-A30-181-040		C-TR,DTA114TEA
	87-A30-236-040		C-FET,MTDF1P02HD
	87-A30-262-080		C-FET,FDC634P
	87-026-527-080		C-TR,HN1A01FU(G)
	87-026-647-080		C-TR,DTA123JE
	87-026-528-080		C-TR,RN1905
DIODE			
	87-017-636-080		C-DIODE,RB731U
	87-A40-562-040		C-DIODE,HSU83TRF
	87-A40-124-080		C-DIODE,RB501V-40
	87-017-852-080		C-DIODE,HRW0502A
	87-A40-412-040		C-DIODE,SB05-05CP
	87-017-850-080		C-DIODE,DAP222
MAIN C.B			
BAT300	87-B30-197-010		BAT,ML614
C100	87-016-296-080		C-CAP,TN 22-4SV(A)
C102	87-016-296-080		C-CAP,TN 22-4SV(A)
C103	87-016-296-080		C-CAP,TN 22-4SV(A)
C104	87-A11-046-080		C-CAP,TN 100U-4 M F95 B
C106	87-016-296-080		C-CAP,TN 22-4SV(A)
C107	87-A10-504-080		C-CAP,U 0.047-16 K B
C108	87-A10-561-080		C-CAP,V 0.01U-16 K B
C109	87-010-787-080		CAP, U 0.022-25
C110	87-A10-353-080		C-CAP,U0.22-10KB
C111	87-012-282-080		CAP, U 4700P-50
C112	87-A11-049-080		C-CAP,U 1-6.3 K B
C113	87-012-282-080		CAP, U 4700P-50
C114	87-A10-353-080		C-CAP,U0.22-10KB
C115	87-016-448-080		C-CAP,TN 2.2-10 F95P
C116	87-012-195-080		C-CAP,U 100P-50CH
C117	87-A10-561-080		C-CAP,V 0.01U-16 K B
C118	87-A10-561-080		C-CAP,V 0.01U-16 K B
C119	87-010-787-080		CAP, U 0.022-25
C120	87-012-284-080		CAP, U 6800P-50
C121	87-A10-504-080		C-CAP,U 0.047-16 K B
C122	87-A10-561-080		C-CAP,V 0.01U-16 K B
C123	87-A10-561-080		C-CAP,V 0.01U-16 K B
C130	87-016-296-080		C-CAP,TN 22-4SV(A)
C202	87-A10-561-080		C-CAP,V 0.01U-16 K B
C203	87-A11-049-080		C-CAP,U 1-6.3 K B
C204	87-A10-827-080		C-CAP,U 0.47-6.3 K B
C205	87-A10-770-080		C-CAP,V 0.1-10 K B
C206	87-012-270-080		CAP, U 470P-50
C207	87-A10-827-080		C-CAP,U 0.47-6.3 K B
C208	87-A10-561-080		C-CAP,V 0.01U-16 K B
C209	87-A10-770-080		C-CAP,V 0.1-10 K B
C210	87-012-169-080		C-CAP,U 7P-50 CH
C211	87-012-169-080		C-CAP,U 7P-50 CH
C212	87-A11-050-080		C-CAP,TN 47U-4 M F95 A
C214	87-A10-770-080		C-CAP,V 0.1-10 K B
C215	87-A10-770-080		C-CAP,V 0.1-10 K B
C216	87-A11-070-080		C-CAP,U 0.033-16 K B
C217	87-012-274-080		CHIP CAP,U 1000P-50B
C218	87-012-274-080		CHIP CAP,U 1000P-50B
C220	87-016-296-080		C-CAP,TN 22-4SV(A)
C221	87-016-296-080		C-CAP,TN 22-4SV(A)
C222	87-A10-770-080		C-CAP,V 0.1-10 K B
C302	87-A10-770-080		C-CAP,V 0.1-10 K B
C303	87-A10-561-080		C-CAP,V 0.01U-16 K B
C304	87-A10-561-080		C-CAP,V 0.01U-16 K B
C305	87-A10-561-080		C-CAP,V 0.01U-16 K B
C306	87-A10-770-080		C-CAP,V 0.1-10 K B
C307	87-A10-770-080		C-CAP,V 0.1-10 K B
C308	87-A10-770-080		C-CAP,V 0.1-10 K B
C309	87-A10-770-080		C-CAP,V 0.1-10 K B
C310	87-A10-770-080		C-CAP,V 0.1-10 K B
C311	87-A10-770-080		C-CAP,V 0.1-10 K B
C312	87-A10-561-080		C-CAP,V 0.01U-16 K B
C313	87-A10-561-080		C-CAP,V 0.01U-16 K B
C314	87-012-186-080		C-CAP,U 39P-50 CH
C315	87-A10-561-080		C-CAP,V 0.01U-16 K B
C316	87-012-169-080		C-CAP,U 7P-50 CH
C317	87-A11-049-080		C-CAP,U 1-6.3 K B
C318	87-A10-561-080		C-CAP,V 0.01U-16 K B
C319	87-A10-561-080		C-CAP,V 0.01U-16 K B
C320	87-A10-561-080		C-CAP,V 0.01U-16 K B
C321	87-012-274-080		CHIP CAP,U 1000P-50B
C350	87-A10-770-080		C-CAP,V 0.1-10 K B
C351	87-A10-770-080		C-CAP,V 0.1-10 K B
C353	87-A10-770-080		C-CAP,V 0.1-10 K B
C354	87-012-197-080		C-CAP,U 150P-50 CH
C355	87-012-195-080		C-CAP,U 100P-50CH
C400	87-016-447-080		C-CAP,TN 1-16 MS<AHK>
C400	87-A10-227-080		C-CAP,TN 2.2-16 F95Q<EXCEPT AHK>
C401	87-A11-049-080		C-CAP,U 1-6.3 K B
C402	87-A11-049-080		C-CAP,U 1-6.3 K B
C404	87-016-448-080		C-CAP,TN 2.2-10 F95P
C405	87-016-448-080		C-CAP,TN 2.2-10 F95P
C406	87-A11-049-080		C-CAP,U 1-6.3 K B
C407	87-A11-049-080		C-CAP,U 1-6.3 K B
C451	87-A10-057-080		C-CAP,TN 100-4 F95 E
C453	87-010-787-080		CAP, U 0.022-25
C454	87-010-787-080		CAP, U 0.022-25
C455	87-A10-504-080		C-CAP,U 0.047-16 K B
C456	87-016-449-080		C-CAP,TN 10-4 F95 P
C457	87-A10-770-080		C-CAP,V 0.1-10 K B
C460	87-A10-770-080		C-CAP,V 0.1-10 K B
C461	87-012-280-080		CAP, U 3300P-50
C462	87-012-274-080		CHIP CAP,U 1000P-50B
C463	87-012-274-080		CHIP CAP,U 1000P-50B
C464	87-012-274-080		CHIP CAP,U 1000P-50B
C500	87-012-266-080		C-CAP,U 220P-50 B
C501	87-016-296-080		C-CAP,TN 22-4SV(A)
C502	87-016-448-080		C-CAP,TN 2.2-10 F95P
C503	87-A10-561-080		C-CAP,V 0.01U-16 K B
C504	87-012-278-080		C-CAP,U 2200P-50 B
C505	87-A11-049-080		C-CAP,U 1-6.3 K B
C506	87-016-564-080		C-CAP,10-6.3 PSN
C507	87-A10-561-080		C-CAP,V 0.01U-16 K B
C508	87-A10-504-080		C-CAP,U 0.047-16 K B
C509	87-A10-504-080		C-CAP,U 0.047-16 K B
C510	87-012-270-080		CAP, U 470P-50
C511	87-A10-770-080		C-CAP,V 0.1-10 K B
C512	87-016-449-080		C-CAP,TN 10-4 F95 P
C513	87-016-449-080		C-CAP,TN 10-4 F95 P
C600	87-A11-067-080		C-CAP,S 1-10 K B
C601	87-A11-045-080		C-CAP,TN 47U-10 M F95 B<AHK>
C601	87-A12-037-080		C-CAP,TN 47U-10 F95-W<ACCEPT AHK>
C604	87-012-274-080		CHIP CAP,U 1000P-50B
C605	87-A10-770-080		C-CAP,V 0.1-10 K B
C606	87-012-274-080		CHIP CAP,U 1000P-50B
C607	87-A10-561-080		C-CAP,V 0.01U-16 K B
C608	87-A11-050-080		C-CAP,TN 47U-4 M F95 A
C611	87-A11-050-080		C-CAP,TN 47U-4 M F95 A
C620	87-A10-260-080		C-CAP,U 0.1-16 K B
C622	87-A10-260-080		C-CAP,U 0.1-16 K B
C700	87-A11-046-080		C-CAP,TN 100U-4 M F95 B
C701	87-A11-049-080		C-CAP,U 1-6.3 K B
C702	87-A11-049-080		C-CAP,U 1-6.3 K B
C703	87-A11-049-080		C-CAP,U 1-6.3 K B
C704	87-A11-049-080		C-CAP,U 1-6.3 K B
C705	87-012-337-080		C-CAP,U 56P-50 CH
C706	87-012-337-080		C-CAP,U 56P-50 CH
C707	87-012-337-080		C-CAP,U 56P-50 CH
C708	87-012-337-080		C-CAP,U 56P-50 CH
C709	87-016-296-080		C-CAP,TN 22-4SV(A)
C710	87-016-296-080		C-CAP,TN 22-4SV(A)
C711	87-016-449-080		C-CAP,TN 10-4 F95 P
C712	87-016-449-080		C-CAP,TN 10-4 F95 P
C713	87-016-296-080		C-CAP,TN 22-4SV(A)
C714	87-A11-049-080		C-CAP,U 1-6.3 K B
C715	87-A11-049-080		C-CAP,U 1-6.3 K B
C716	87-A11-049-080		C-CAP,U 1-6.3 K B
C717	87-A11-049-080		C-CAP,U 1-6.3 K B
C730	87-A11-049-080		C-CAP,U 1-6.3 K B
C753	87-012-274-080		CHIP CAP,U 1000P-50B
C754	87-012-274-080		CHIP CAP,U 1000P-50B
C755	87-A10-770-080		C-CAP,V 0.1-10 K B
C756	87-A10-770-080		C-CAP,V 0.1-10 K B
C757	87-016-462-080		C-CAP,S 1-16 ZP<EXCEPT AHK>
C770	87-012-337-080		C-CAP,U 56P-50 CH
C771	87-012-337-080		C-CAP,U 56P-50 CH
C772	87-016-296-080		C-CAP,TN 22-4SV(A)
C773	87-A11-049-080		C-CAP,U 1-6.3 K B
C774	87-016-296-080		C-CAP,TN 22-4SV(A)
C775	87-A11-049-080		C-CAP,U 1-6.3 K B
C776	87-A11-049-080		C-CAP,U 1-6.3 K B
C777	87-A11-049-080		C-CAP,U 1-6.3 K B
C778	87-A10-048-080		C-CAP,TN 22-4 F95 S
C779	87-A10-048-080		C-CAP,TN 22-4 F95 S
C782	87-A11-318-080		C-CAP,TN 220U-2.5 SVB2
C783	87-A11-318-080		C-CAP,TN 220U-2.5 SVB2
C784	87-A10-770-080		C-CAP,V 0.1-10 K B
C785	87-A10-048-080		C-CAP,TN 22-4 F95 S
C787	87-A10-770-080		C-CAP,V 0.1-10 K B
C788	87-A10-770-080		C-CAP,V 0.1-10 K B
CN100	87-A61-141-080		C-CONN,22P H 54550-2290
CN200	87-A61-140-080		C-CONN,10P H 54548-1090
CN300	87-A61-136-080		C-CONN,6P H 54550-0690
CN400	87-A61-138-080		C-CONN,9P H 54550-0990
CN500	87-A61-139-080		C-CONN,10P H 54550-1090
CN600	87-A61-137-080		C-CONN,6P H 54548-0690
⚠ F600	87-A90-745-080		C-FUSE,750MA 13.2V MINISMDC075
⚠ F601	87-A90-745-080		C-FUSE,750MA 13.2V MINISMDC075
J600	87-A60-544-010		JACK,DC 4.0 Y 6.3
J730	87-A61-070-010		JACK,JFJ7001
J780	87-A60-682-010		JACK,3.5 ST 7P
L100	87-A50-360-080		C-COIL, 47UH K NLFC252018
L102	87-A50-360-080		C-COIL, 47UH K NLFC252018
L130	87-A50-360-080		C-COIL, 47UH K NLFC252018
L200	87-A50-359-080		C-COIL, 22UH K NLFC252018
L300	87-A50-355-080		C-COIL,330UH LQH3C
L400	87-A50-358-080		C-COIL, 10UH K NLFC252018
L401	87-A50-358-080		C-COIL, 10UH K NLFC252018
L402	87-A50-358-080		C-COIL, 10UH K NLFC252018
L403	87-A50-358-080		C-COIL, 10UH K NLFC252018
L404	87-A50-013-080		C-COIL,560UH LQH3C
L405	87-A50-355-080		C-COIL,330UH LQH3C
L450	87-A50-108-080		C-COIL,330H K NLC<AHK>
L450	87-A50-355-080		C-COIL,330UH LQH3C<EXCEPT AHK>
L500	87-A50-361-080		C-COIL, 100UH K NLFC252018
L501	87-A50-011-080		C-COIL,470UH LQH3C
L600	87-A50-290-080		C-COIL,56UHC5-Q3L
L602	87-A50-271-080		C-COIL,ACM4532-801-2P
L710	87-003-245-080		C-COIL,22UH
L730	87-A50-362-080		C-COIL,ACM2520-601-2P
L731	87-A50-362-080		C-COIL,ACM2520-601-2P
L770	87-A50-362-080		C-COIL,ACM2520-601-2P
L771	87-A50-362-080		C-COIL,ACM2520-601-2P
R108	87-022-294-080		C-RES,U 470K 1-16W F
R114	87-022-223-080		CHIP RES 2.2K 1/16W F
R115	87-022-223-080		CHIP RES 2.2K 1/16W F
R116	87-022-223-080		CHIP RES 2.2K 1/16W F
R221	87-A91-642-080		C-F-BEAD,BK1005HS601<EXCEPT AHK>
R304	87-022-239-080		C-RES U 10K-1/16WF
R502	87-022-227-080		C-RES,U 3.3K-1/16W F
R506	87-022-217-080		C-RES,U 1.2K-1/16W F
R507	87-022-237-080		C-RES,U 8.2K-1/16W F
R508	87-022-243-080		CHIP RES,U 15K-1/16W F
R509	87-022-255-080		C-RES,U 47K-1/16W F
R600	87-022-288-080		C-RES,U 150K-1/16WF
R601	87-022-287-080		C-RES,U 120K-1/16W F
R609	87-022-288-080		C-RES,U 150K-1/16WF
R610	87-022-284-080		C-RES,U 68K 1-16W F
R619	87-022-249-080		C-RES U27K 1/16WF
S300	87-A90-330-080		C-SW,SL 1-1-2 SSSS81
S301	87-A90-330-080		C-SW,SL 1-1-2 SSSS81
S303	87-A91-419-080		C-SW,PUSH MPU11121MLB1
S304	87-A91-419-080		C-SW,PUSH MPU11121MLB1
S600	87-A90-232-080		C-SW,TACT SKQRAA
S730	87-A90-703-080		C-SW,SL 1-1-3 SSSS813-B-2B
X200	87-A70-238-080		C-VIB,XTAL 22.5792MHZ SX-5B
X300	87-A70-227-080		C-VIB,XTAL 32.768KHZ CM200S-6P
X301	87-A70-100-080		C-VIB,CER 12.0MHZ PBRC-BR-A
MECHA C.B			
CN50	87-A61-139-080		C-CONN,10P H 54550-1090
S50	87-A91-419-080		C-SW,PUSH MPU11121MLB1
S51	87-A91-419-080		C-SW,PUSH MPU11121MLB1
S52	87-A91-008-080		C-SW,PUSH 2-1-1 SPVE4.1
S53	87-A91-009-080		C-SW,PUSH 2-1-1 SPVE5.2
S54	87-A91-420-080		C-SW,PUSH MPU11120MLA1

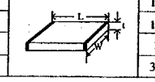
REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
FLEX MECHA C.B			
	8A-HM1-610-010		PWB,FLEX MECHA
FLEX EL C.B			
LCD1	8A-HM1-605-010		LCD,AHM-1 COG
	8A-HM1-608-010		PWB,FLEX EL
FLEX TACT C.B			
	8A-HM1-606-010		PWB,FLEX TACT

Oチップ抵抗部品コード／CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち
Chip Resistor Part Coding

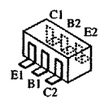


チップ抵抗
Chip resistor

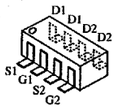
容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm) 外形／Form	L	W	t	抵抗コード : A Resistor Code : A
1/16W	1005	±5%	CJ		1.0	0.5	0.35	104
1/16W	1608	±5%	CJ		1.6	0.8	0.45	108
1/10W	2125	±5%	CJ		2	1.25	0.45	118
1/8W	3216	±5%	CJ		3.2	1.6	0.55	128

TRANSISTOR ILLUSTRATION

2SK2035



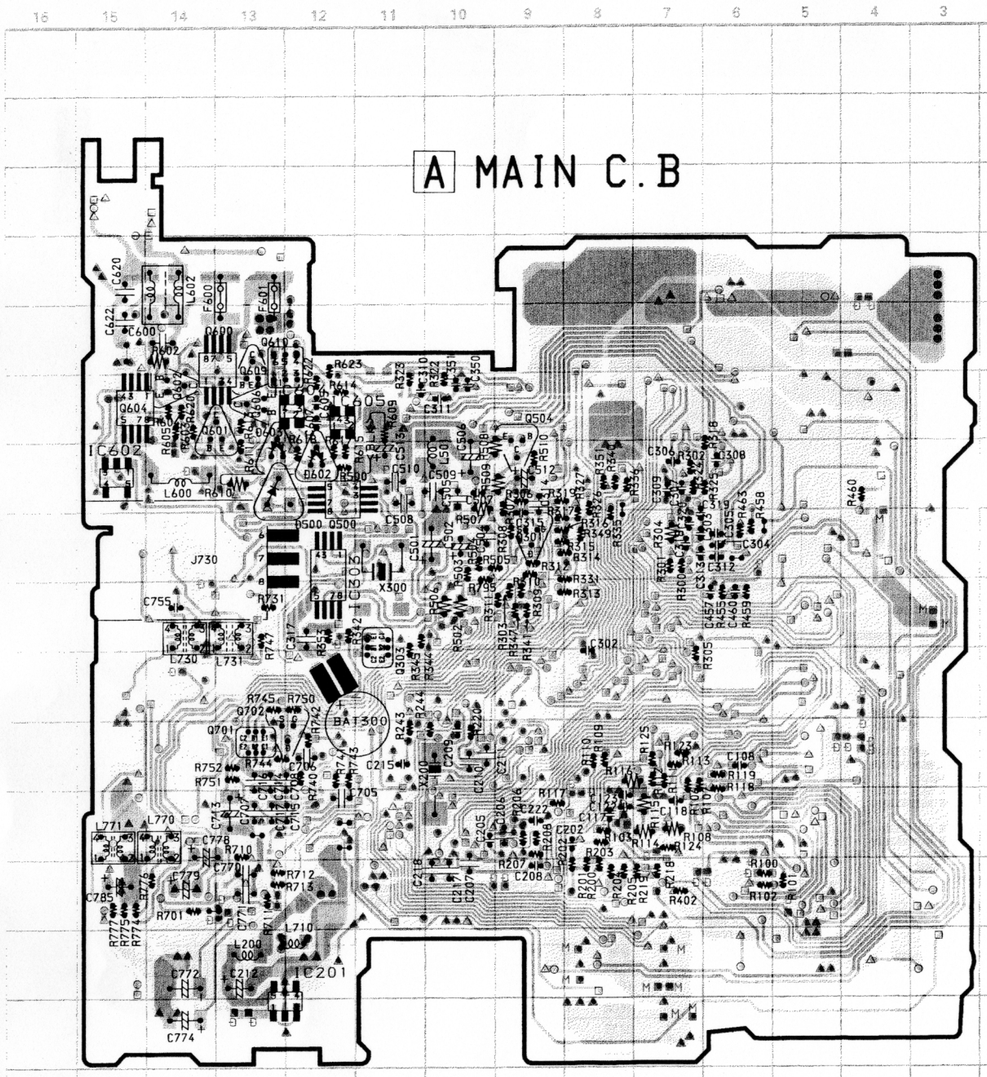
HN1A01FU
HN1C01FU
RN1905
RN4910

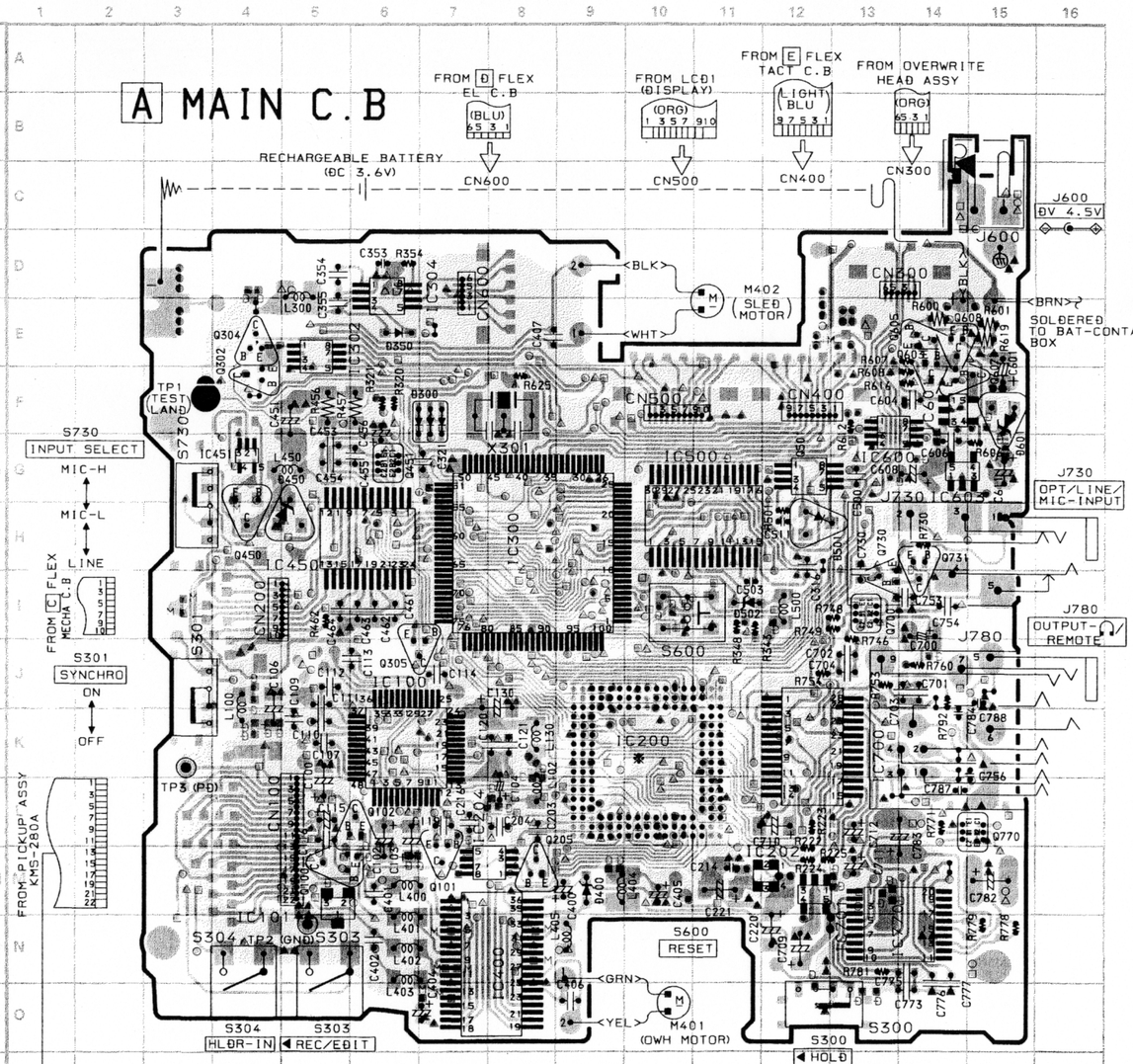


MTDF1N02HD
MTDF1P02HD
MTDF2N06HD

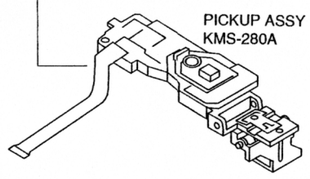
2SA1362
2SA1588
2SA1832
2SC4738
DTA114TEA
DTA123JE
DTA144EE
DTC114TE
DTC144EE

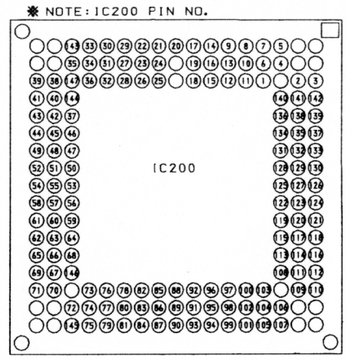
FDC634P



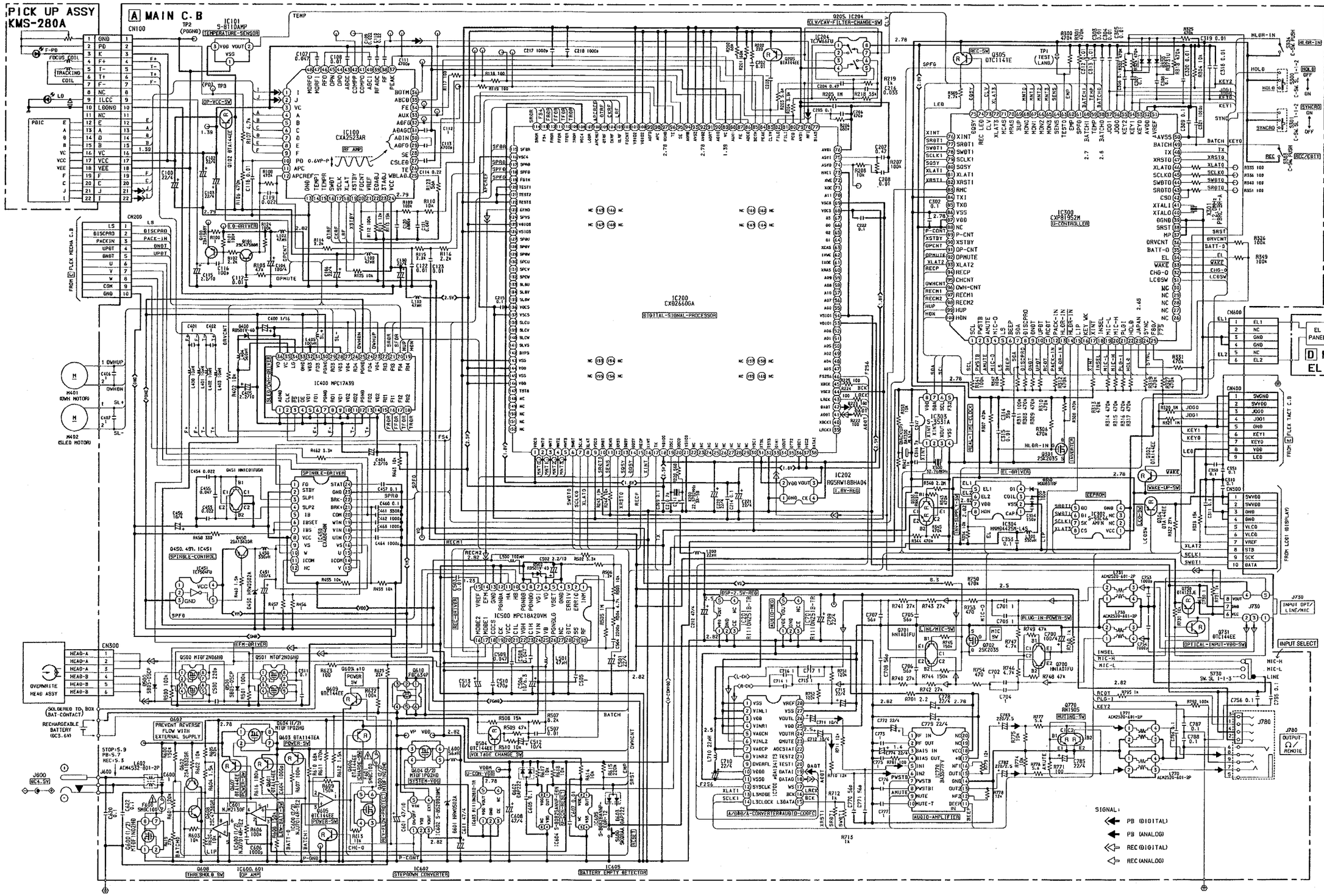


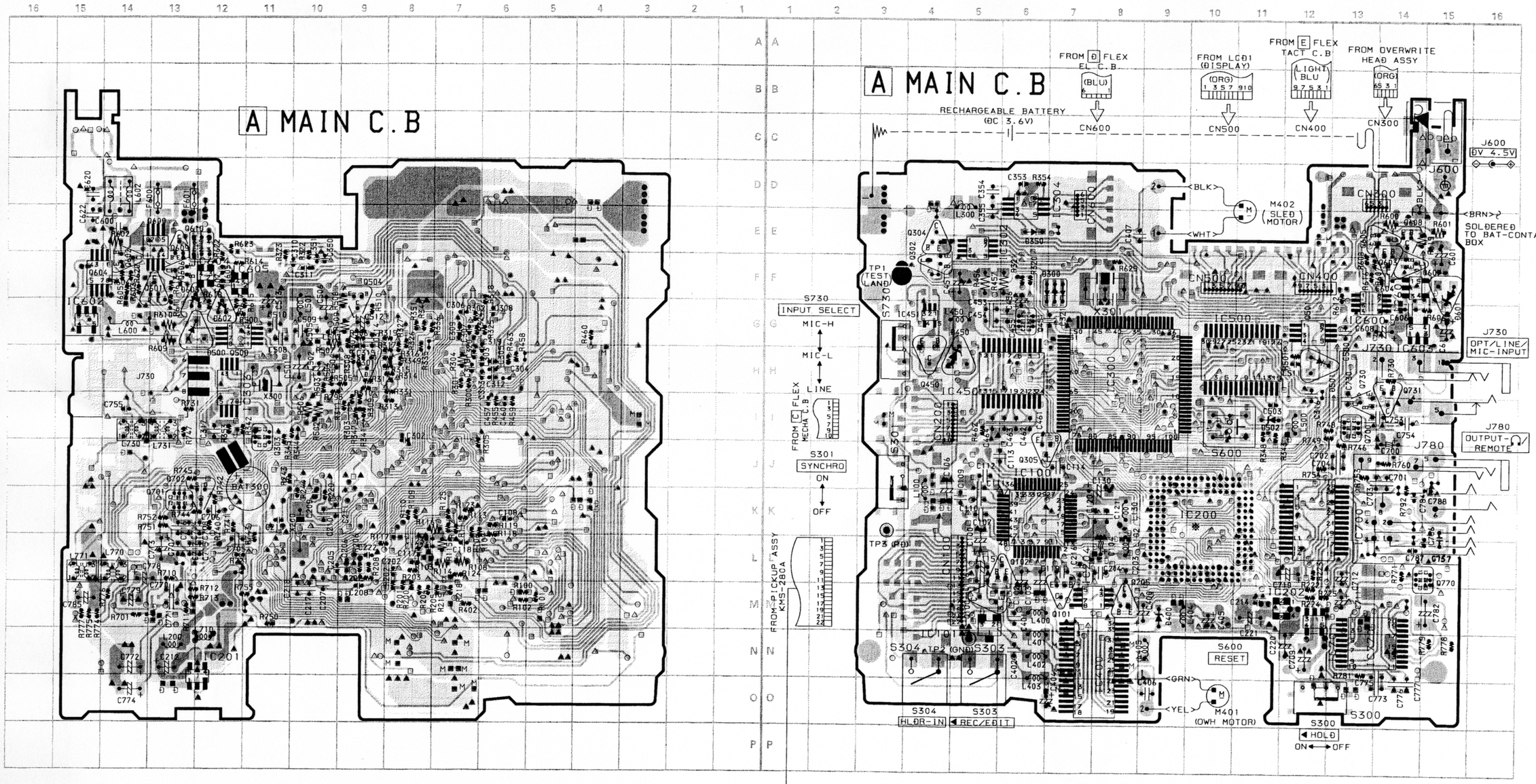
THIS WIRING SHOWS A 4-LAYER BOARD. THE ▲, ● , ■ , ■D, ■M MARKS SHOW THE CONNECTIONS BETWEEN THE USUAL DOUBLE-FACE PATTERNS AND THE PATTERNS ON THE INTERNAL LAYERS THAT CANNOT BE SEEN.
THE PATTERNS WITH ▲ MARKS ARE CONNECTED TO GND PATTERNS.
THE PATTERNS WITH ● MARKS ARE CONNECTED TO JUMPER PATTERNS.
THE PATTERNS WITH ■ MARKS ARE CONNECTED TO U-CON VDD PATTERNS.
THE PATTERNS WITH ■ D MARKS ARE CONNECTED TO VDD PATTERNS.
THE PATTERNS WITH ■ M MARKS ARE CONNECTED TO VM PATTERNS.



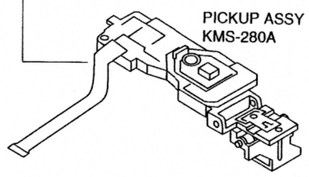


SCHEMATIC DIAGRAM – 1 (MAIN : AHK)

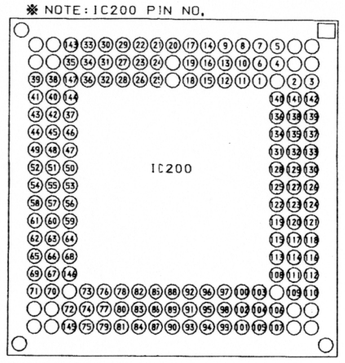

PICK UP ASSY
KMS-280A
A MAIN C-B
IC101
S-8810AMP
TEMPERATURE-SENSOR
IC100
CXA2523AR
RF AMP
IC200
CXD2660GA
DIGITAL-SIGNAL-PROCESSOR
IC300
CXP81952M
μ-CONTROLLER
IC400 MPC17A39
SPINDLE-DRIVER
IC500 MPC18A20VM
REC-DRIVER
IC303
SM5877FV
IC202
R05AW18BHA04
1.8V-REG
IC602
STEPDOWN CONVERTER
IC405
BATTERY EMPTY DETECTOR
IC600, 601
OP-AMP
IC304
HMM64425P-L45
EEPROM
IC301
CXD1922Q
IC270
AN7135M
AUDIO-AMPLIFIER
IC204
TC7W66FU
CLV/CAV-FILTER-CHANGE-SW
Q205, IC204
CLV/CAV-FILTER-CHANGE-SW
Q205
DTC114TE
REC-SW
Q102
BTA144EE
OP-VCC-SW
Q103
2SA1362R
LD-DRIVER
Q101
2SC4738GR
Q500
MTDF2N06HD
EFM-DRIVER
Q501
MTDF2N06HD
Q603
DTA114EA
POWER-SW
Q604 (2/2)
MTDF1P02HD
SYSTEM-VDD
Q605
DTC114EE
POWER-SW
Q606 (1/2)
MTDF1N02HD
LOW-BATT-DET
Q607
DTC114EE
LOW-BATT-DET
Q608
2SC4081R
THRASHER-SW
Q609
DTC114EE
POWER-SW
Q610
FBC634P
Q701
2SC2035
MIC-SW
Q702
2SC2035
LINE/MIC-SW
Q705
2SC2035
PLUG-IN-POWER-SW
Q750
DTA114EE
OPTICAL-INPUT-VDD-SW
Q770
RN1905
MUTING-SW
Q800
2SC2035
INVERTER
Q801
DTA144EE
WAKE-UP-SW
Q802
DTA144EE
LCD-SW
Q9205
BTA144EE
REGULATOR
Q9205, IC204
CLV/CAV-FILTER-CHANGE-SW
IC201
CXA1782BR
PDIC-I/V-AMP
IC270
AN7135M
D-A/D-CONVERTER&AUDIO-CODEC
IC1451
TC7S04FU
SPINDLE-CONTROL
IC1500
CXA1782BR
RF-I/V-AMP
IC1501
CXA1782BR
SERVO-AMP
IC1502
CXA1782BR
DIGITAL-I/F
IC1503
CXA1782BR
DSP
IC1504
CXA1782BR
RF-AMP
IC1505
CXA1782BR
SERVO-AMP
IC1506
CXA1782BR
DIGITAL-I/F
IC1507
CXA1782BR
DSP
IC1508
CXA1782BR
RF-AMP
IC1509
CXA1782BR
SERVO-AMP
IC1510
CXA1782BR
DIGITAL-I/F
IC1511
CXA1782BR
DSP
IC1512
CXA1782BR
RF-AMP



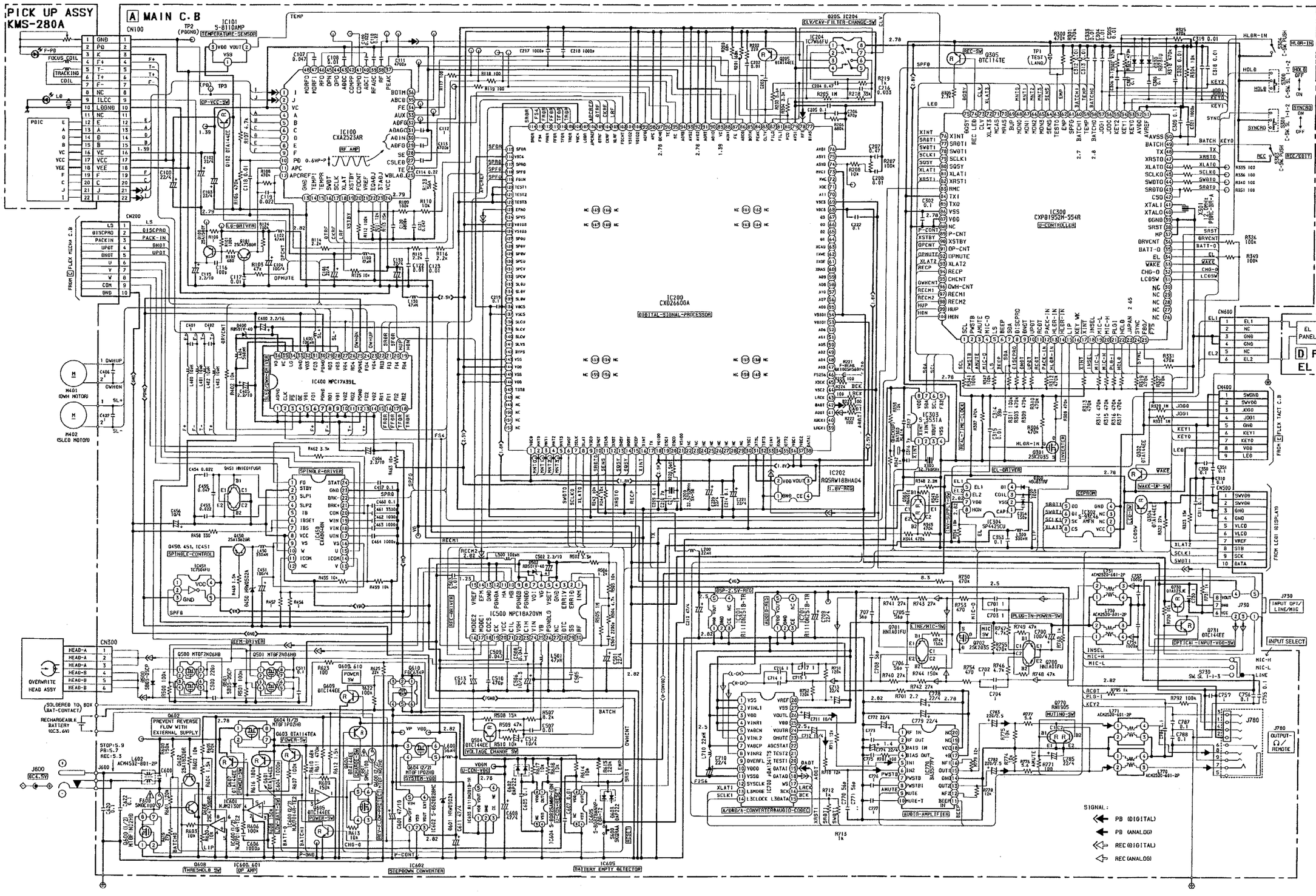
THIS WIRING SHOWS A 4-LAYER BOARD. THE▲.● .■ .■Đ. ■M MARKS SHOW THE CONNECTIONS BETWEEN THE USUAL DOUBLE-FACE PATTERNS AND THE PATTERNS ON THE INTERNAL LAYERS THAT CANNOT BE SEEN.
THE PATTERNS WITH▲MARKS ARE CONNECTED TO GND PATTERNS.
THE PATTERNS WITH●MARKS ARE CONNECTED TO JUMPER PATTERNS.
THE PATTERNS WITH■MARKS ARE CONNECTED TO U-CON VDD PATTERNS.
THE PATTERNS WITH■Đ MARKS ARE CONNECTED TO VDD PATTERNS.
THE PATTERNS WITH■M MARKS ARE CONNECTED TO VM PATTERNS.



※ NOTE: IC200 PIN NO.

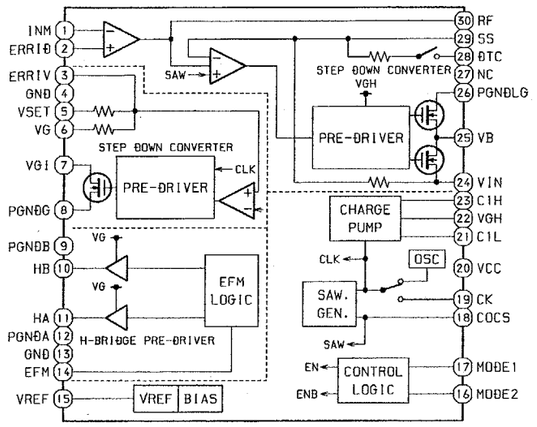


SCHEMATIC DIAGRAM – 2 (MAIN : AHC, AHR, AK, AEZ, AU)

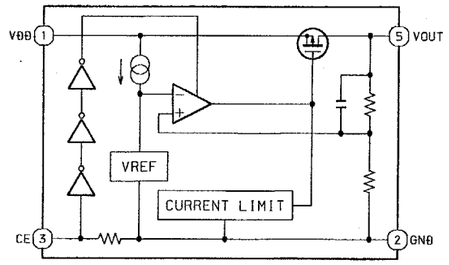

PICK UP ASSY
KMS-280A
A MAIN C.B
CN100
IC101
S-8810AMP
TEMPERATURE-SENSOR
IC100
CXA2523AR
RF AMP
IC200
CX02660GA
DIGITAL-SIGNAL-PROCESSOR
IC400 MPC17A39L
SPINDLE-DRIVER
IC500 MPC18A20VM
REC-DRIVER
IC204
TC7W66FU
CLV/CAV-FILTER-CHANGE-SW
IC300
CXP81952M-554R
M-CONTROLLER
IC202
R5F1124A
EEPROM
IC303
S-8521A
REAL-TIME-CLOCK
IC304
SM4425CU
EL-DRIVER
IC201
R1112N025B-TR
IC202 R5F1124A
IC602
STEPDOWN CONVERTER
IC605
BATTERY EMPTY DETECTOR
IC600, 601
OP AMP
IC202 R5A9W18BHA04
1.8V-REG
IC203 R1112N025B-TR
DSP-2.5V-REG
IC204 R1112N028B-TR
AUDIO-REG
IC701
A/D&D/A-CONVERTER&AUDIO-CODEC
IC770
BA3547FM
AUDIO-AMPLIFIER
Q205 IC204
CLV/CAV-FILTER-CHANGE-SW
Q305
DTC114TE
REC-SW
Q306
DTA114EE
LED
Q307
DTA114EE
WAKE-UP-SW
Q308
DTC144EE
WAKE
Q309
DTC144EE
POWER SW
Q310
DTC144EE
POWER-SW
Q311
DTC144EE
POWER-SW
Q312
DTC144EE
POWER-SW
Q313
DTC144EE
POWER-SW
Q314
DTC144EE
POWER-SW
Q315
DTC144EE
POWER-SW
Q316
DTC144EE
POWER-SW
Q317
DTC144EE
POWER-SW
Q318
DTC144EE
POWER-SW
Q319
DTC144EE
POWER-SW
Q320
DTC144EE
POWER-SW
Q321
DTC144EE
POWER-SW
Q322
DTC144EE
POWER-SW

IC BLOCK DIAGRAM – 1

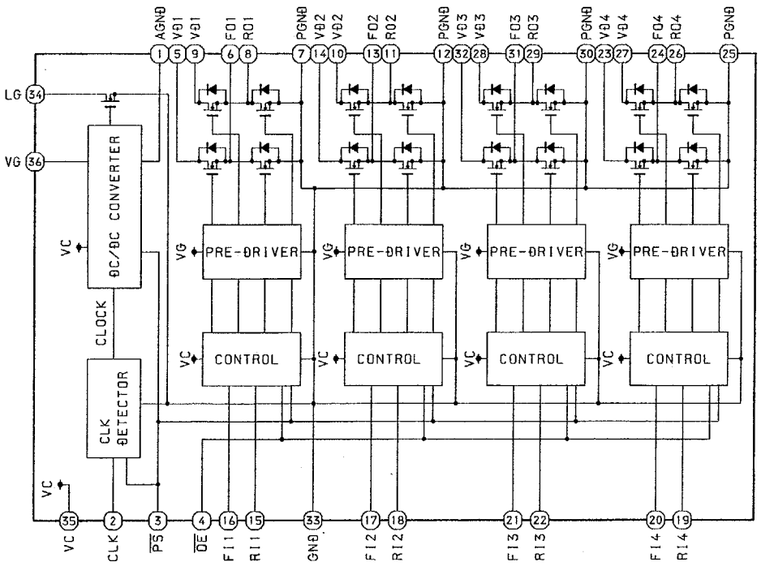
IC, MPC18A20VM



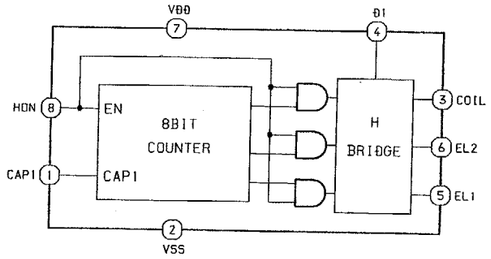
IC, R1110N251B-TR
IC, R1110N281B-TR



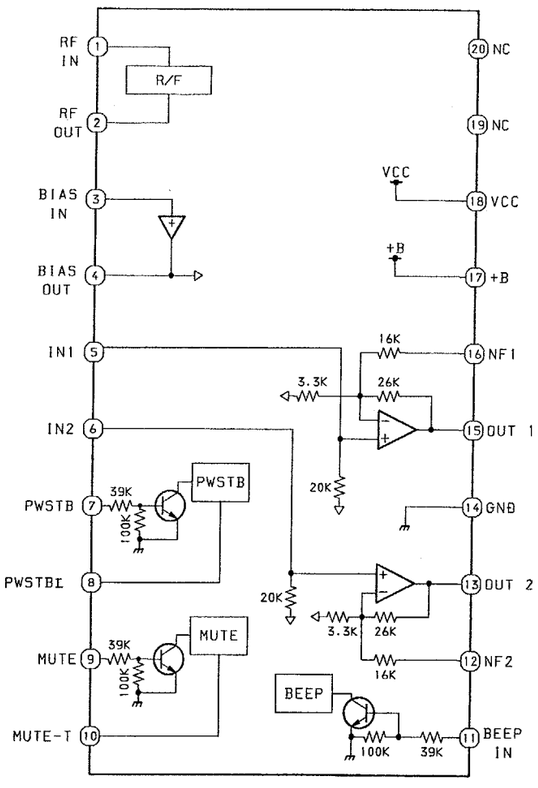
IC, MPC17A39
IC, MPC17A39L



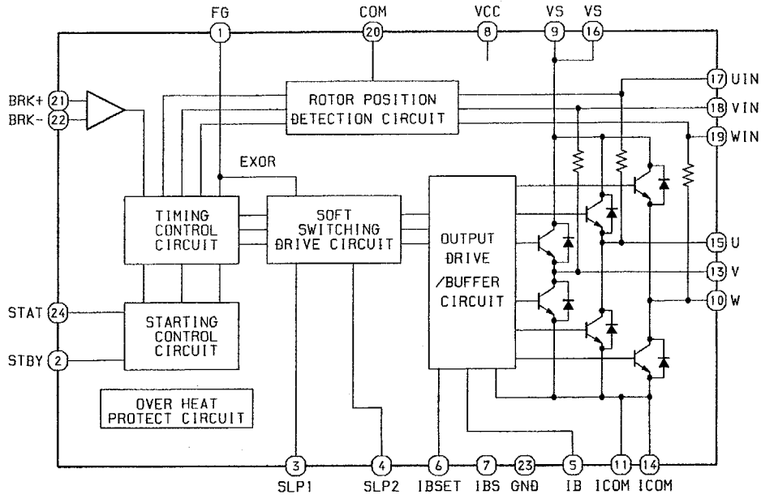
IC, HMMD4425M-L4S
IC, SP4425CU



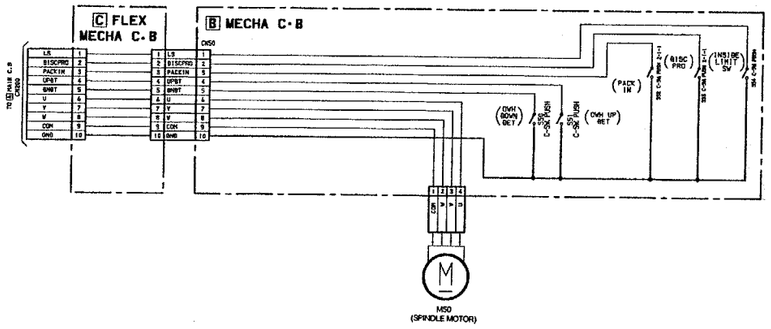
IC, BA3577FV

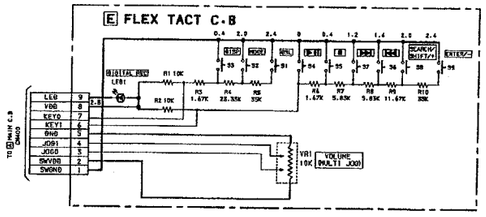


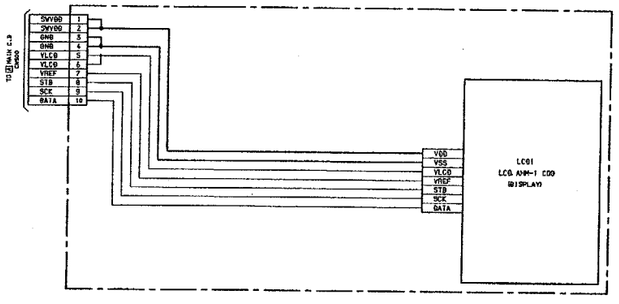
IC, CXA8048N

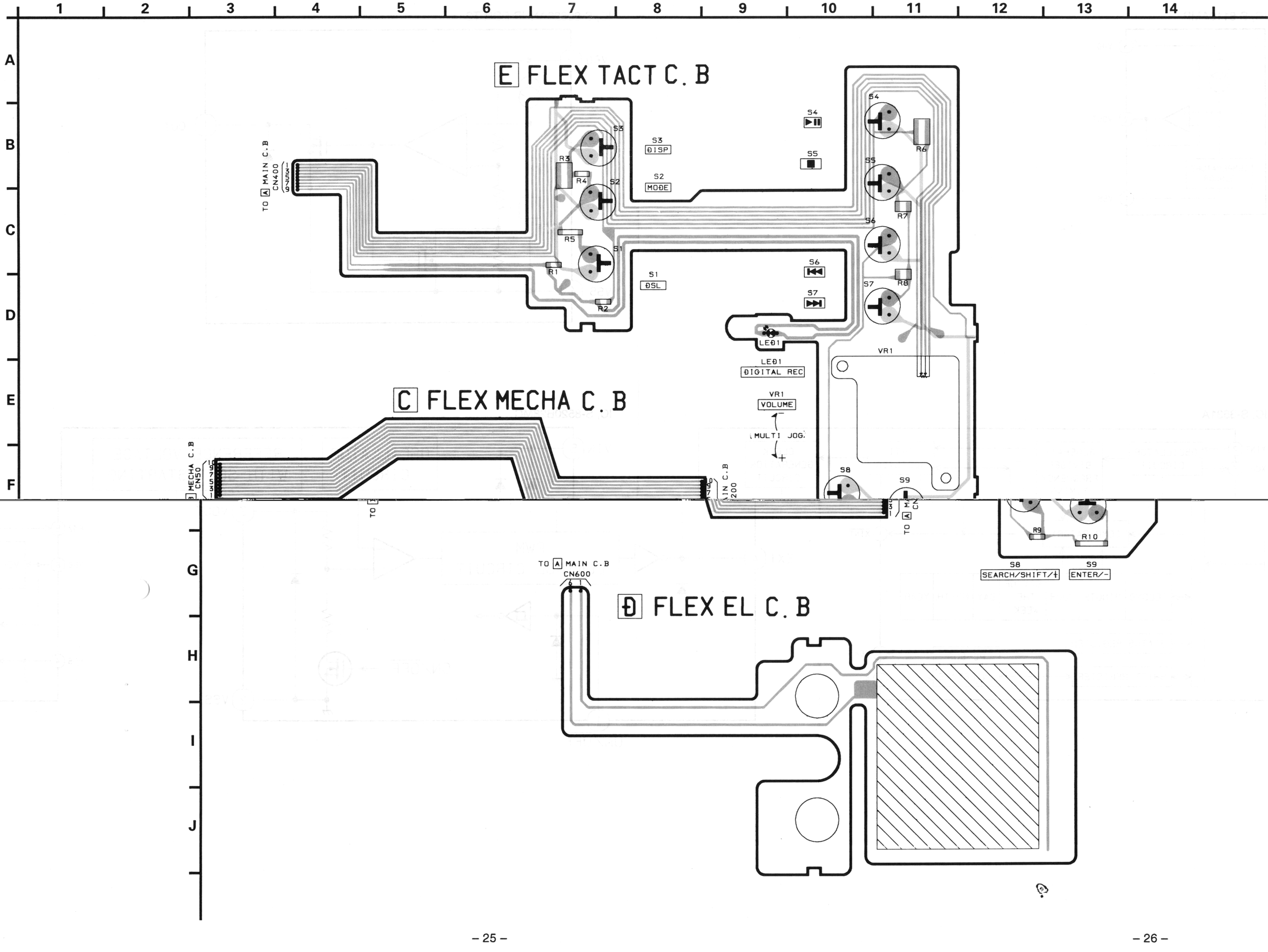


SCHEMATIC DIAGRAM – 3 (MECHA / FLEX MECHA / FLEX TACT / LCD 1)



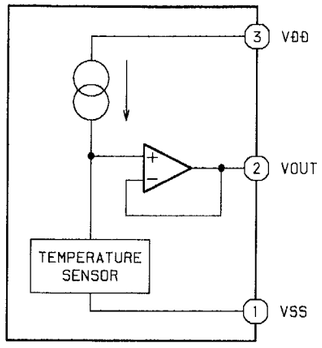




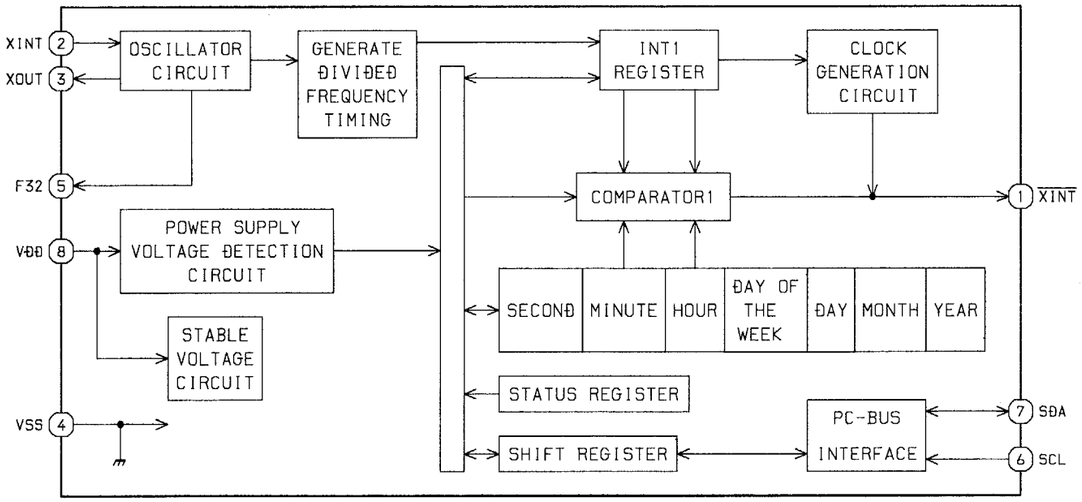

E FLEX TACT C. B
TO A MAIN C.B CN400
S3 DISP
S2 MODE
S1 DSL
S4
S5
S6
S7
R1
R2
R3
R4
R5
R6
R7
R8
LED1
LED1 DIGITAL REC
VR1
VR1 VOLUME
MULTI JOG
C FLEX MECHA C. B
MECHA C.B CN50
TO A MAIN C.B CN200
S8
S9
R9
R10
S8 SEARCH/SHIFT/+
S9 ENTER/-
TO A MAIN C.B CN600
D FLEX EL C. B

IC BLOCK DIAGRAM – 2

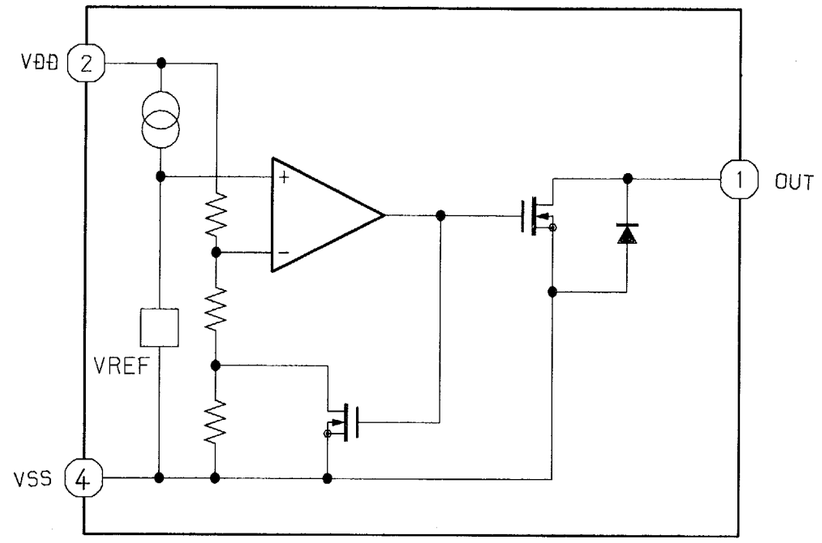
IC, S-8110AMP



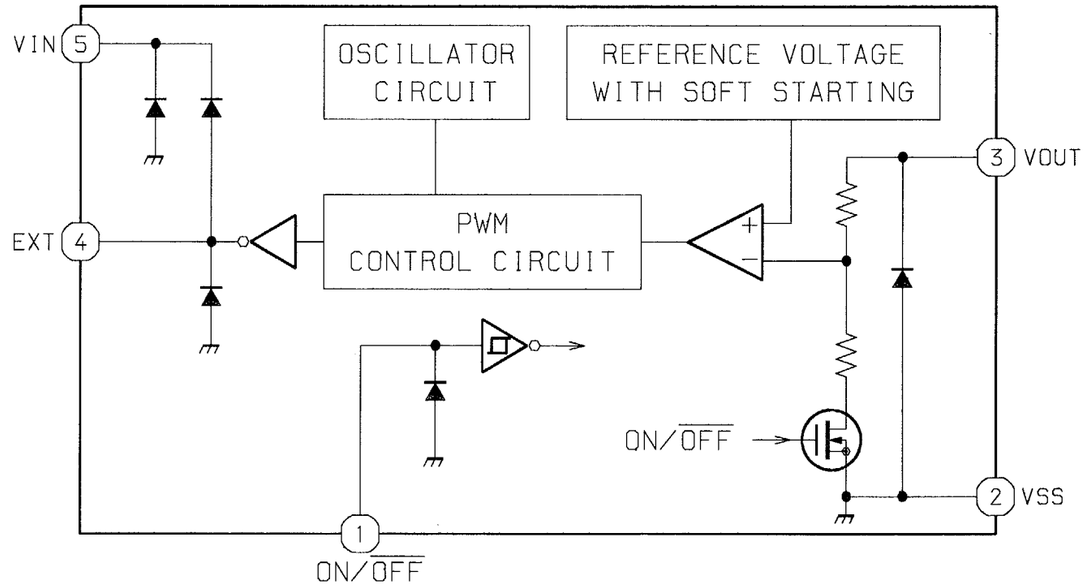
IC, S-3531A



IC, S-80828ANNP-EDR-T2



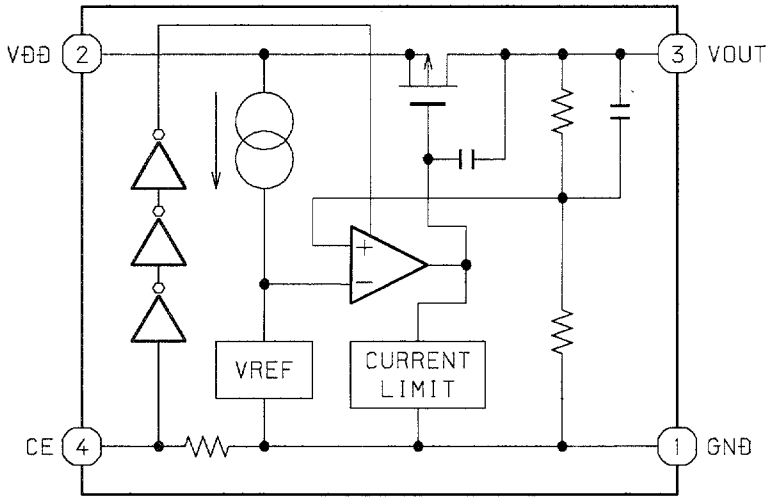
IC, S-8520B28MC



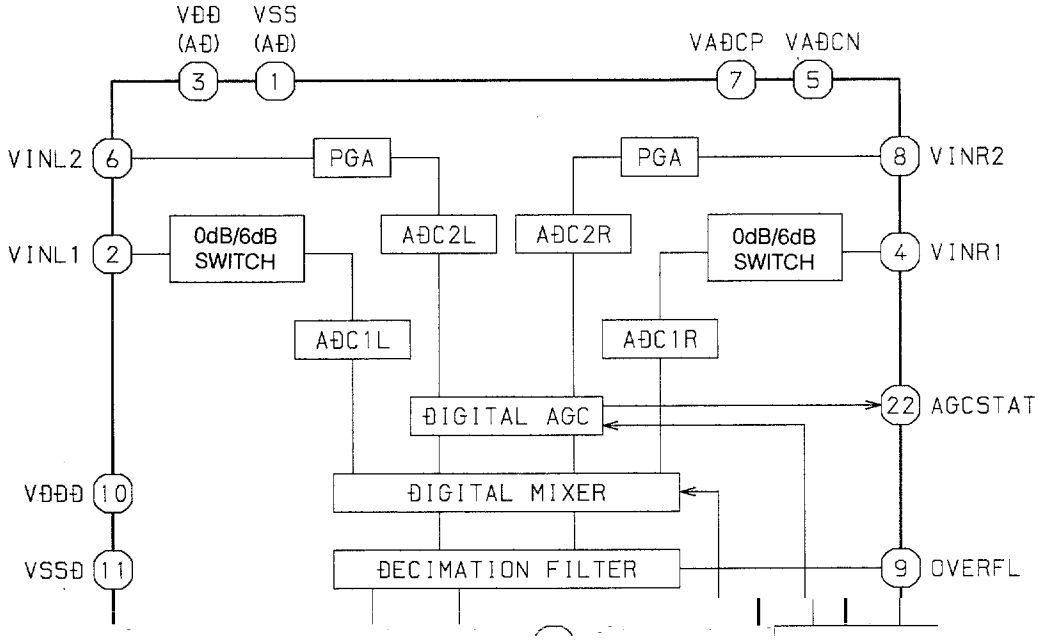
10
9
8
S3
(DISC PRO)
S2
S3

IC BLOCK DIAGRAM – 3

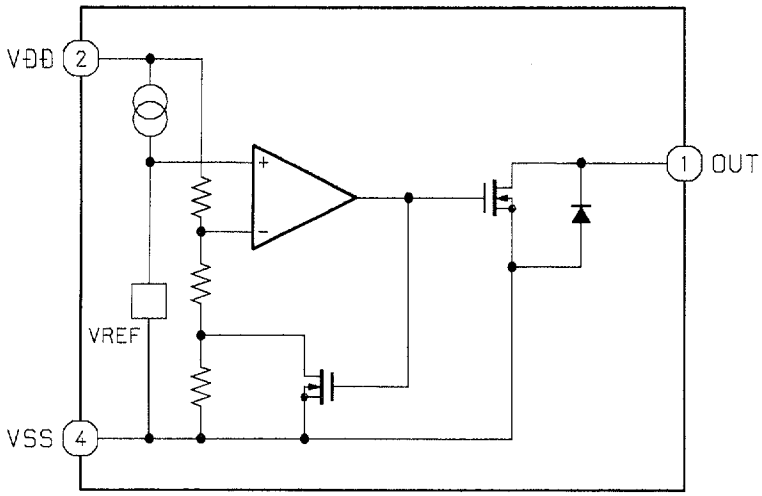
IC, RQ5RW18BHA04



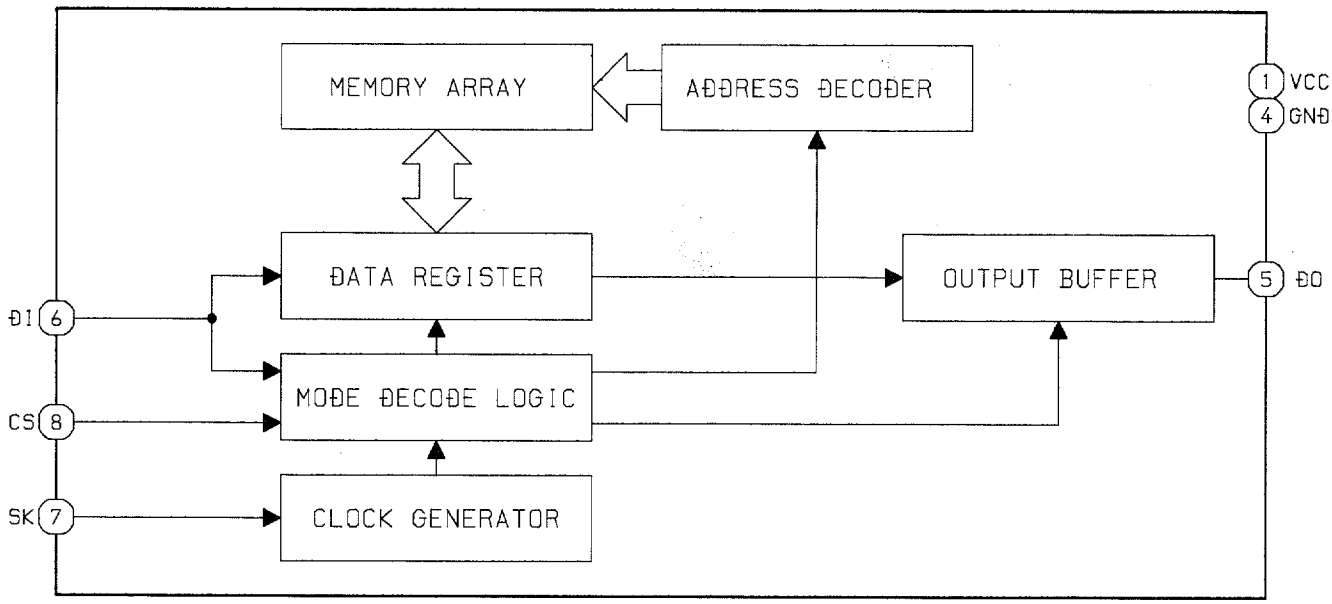
IC, UDA1341TS



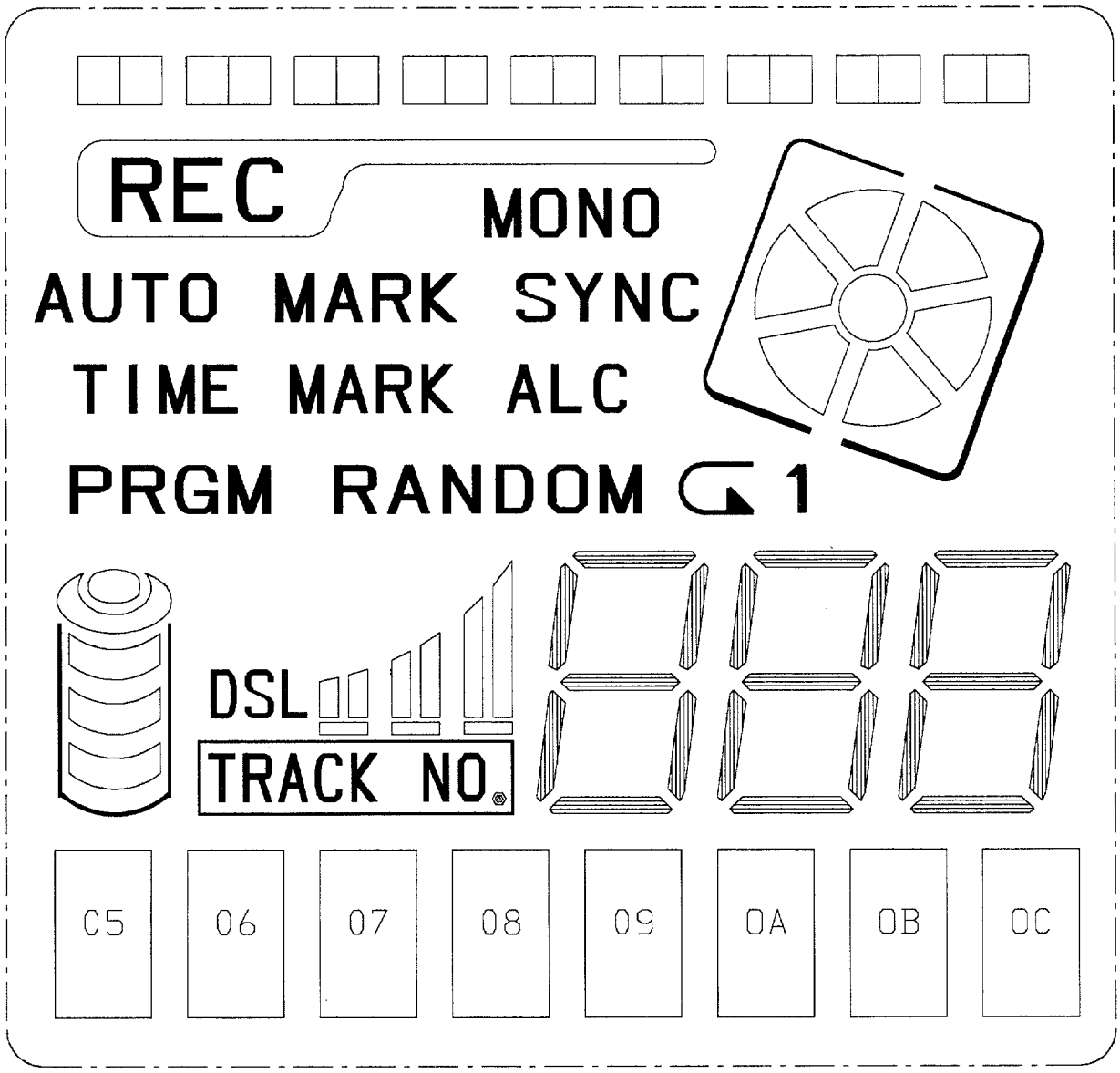
IC, S-80825ANNP-EDN

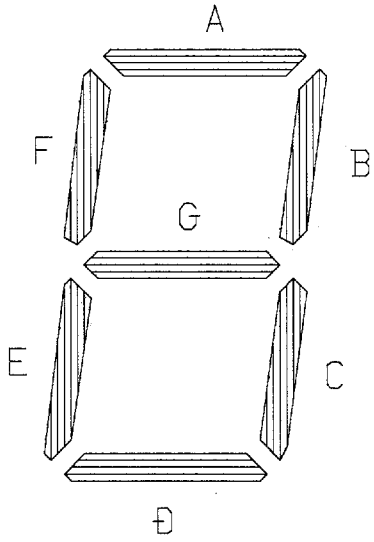


IC, S-93C46AMFN



LCD DISPLAY


REC
MONO
AUTO MARK SYNC
TIME MARK ALC
PRGM RANDOM
1
DSL
TRACK NO.
05
06
07
08
09
0A
0B
0C


A
F
B
G
E
C
D

IC DESCRIPTION

IC, CXP81952M

IC, CXP81952M-554R

Pin No.	Pin Name	I/O	Description
1	SCL	O	Clock IC (S-3531A) clock output pin.
2	PWSTB	O	Head-phone amp standby output. ("L": Standby)
3	AMUTE	O	Head-phone LINE MUTE. ("H": Mute)
4	MIC-O	O	MIC/LINE switch and MIC plug IN power control pin. ("H": MIC)
5	LS	I	Limit switch detection. ("L": ON)
6	BEEP	O	Output pin for BEEP sound.
7	SDA	I/O	Clock IC (S-3531A) data bus.
8	DISCPRO	I	Disc record prohibition switch detection. ("H": Disable recording)
9	DNDT	I	Head DOWN switch. ("L": ON)
10	UPDT	I	Head UP switch. ("L": ON)
11	RCDT	O	Remote control output.
12	PACK-IN	I	Pack IN switch detection. ("L": Detected pack)
13	HLDR-IN	I	Holder switch detection. ("L": Close)
14	$\overline{\text{HLDR-IN}}$	I	Holder switch detection. ("H": Close)
15	LIP	I	"L" when detecting AC adaptor.
16	KEY WK	I	Input pin to wake up the remote control key.
17	$\overline{\text{XINT}}$	I	Clock IC (S-3531A) alarm interrupt input. (Input 1Hz)
18	INSEL	I	Input select. ("H": Analog)
19	MIC-L	I	MIC/LINE switch, "H"=LINE, "L"=MIC-L, "H"=MIC-H.
20	MIC-H	I	MIC/LINE switch, "H"=LINE, "H"=MIC-L, "L"=MIC-H.
21	PLGI	I	Head-phone jack insertion "L" detection.
22	HOLD	I	Key HOLD switch detection. ("H": HOLD)
23	JAPAN	I	Destination setting. ("H": D type, "L": Export type)
24	SYNC	I	Synchro REC switch detection. ("L": ON)
25	F80/$\overline{\text{F75}}$	I	Model setting. ("H": AM-F80, "L": AM-F75)
26	NC	–	Not connected.
27	NC	–	Not connected.
28	NC	–	Not connected.
29	NC	–	Not connected.
30	NC	–	Not connected.
31	LCD SW	O	LCD ON/OFF output. ("L" when ON)
32	CHG-O	O	Charge control output pin. ("L": Charge)
33	$\overline{\text{WAKE}}$	O	Power-control output pin at WAKEUP. "L" setting at WAKEUP.
34	EL	O	EL ON/OFF. ("H": EL light ON)
35	BATT-O	O	AC adaptor/battery switching output. ("L": AC adaptor)
36	DRVCNT	O	Driver IC (MPC17A39) Power Control. ("L" is ON)
37	MP	–	Connected to GND.
38	SRST	I	Micro-processor reset.
39	DGND	–	Connected to GND.
40	XTALO	–	12MHz clock.
41	XTALI	–	12MHz clock.

Pin No.	Pin Name	I/O	Description
42	CSO	I	Serial data FLAG check.
43	SRDTO	I	Serial data IN.
44	SWDTO	O	Serial data OUT.
45	SCLKO	O	Serial clock.
46	XLATO	O	Serial data latch.
47	XRSTO	O	Reset IC.
48	TX	O	Record data output enable. ("H": Enable)
49	BATCH	I	A/B input pin for voltage supply monitor.
50	AVSS	–	Connected to GND.
51	AVREF	–	Connected to VDD.
52	AVDD	–	Connected to VDD.
53	KEY0	I	Key 0.
54	KEY1	I	Key 1.
55	KEY2	I	Key 2. (Remote control)
56	JOG0	I	Jog dial input pin.
57	JOG1	I	Jog dial input pin.
58	BATCH0	I	A/D input pin for power supply voltage check.
59	TEMP	I	A/D input pin for temperature sensor.
60	BATCH1	I	A/D input pin for charging check.
61	SPFG	I	Spindle F/G input pin.
62	EMP	I	Detect battery empty. ("L": Empty)
63	TEST0	I	"L": Test mode.
64	SENS	I	SENS input.
65	MON3	I	Monitor pin 3.
66	MON2	I	Monitor pin 2.
67	MON1	I	Monitor pin 1.
68	MON0	I	Monitor pin 0.
69	BUP	O	Used for control selection at DRAM backup. (Normal setting at "L") (Not used.)
70	MRAS	O	DRAM micro-processor control RAS. (Normal setting at "L") (Not used.)
71	MCAS	O	DRAM micro-processor control CAS. (Normal setting at "L") (Not used.)
72	XLAT3	O	Chip select output pin for EEPROM.
73	CLV	O	Circuit switch output for wide range PLL.("H": Normal PLL)
74	REC LED	O	REC LED. ("H": Light ON)
75	DQSY	I	Digital IN sync.
76	XINT	I	CXD2660GA status sync.
77	SRDT1	I	Data input pin for AD/DA and EEPROM.
78	SWDT1	O	Data output pin for LCD, AD/DA and EEPROM.
79	SCLK1	O	Clock output pin for LCD, AD/DA and EEPROM.
80	SQSY	I	SUBQ, ADIP sync input.
81	XLAT1	O	Mode output pin for AD/DA.
82	XRST1	O	Mute output pin for AD/DA.

Pin No.	Pin Name	I/O	Description
83	RMC	I	Connected to digital IN.
84	TXI	–	Connected to GND.
85	TXO	–	Open. (Not used)
86	VSS	–	Connected to GND.
87	VDD	–	Connected to VDD.
88	NC	–	Connected to VDD.
89	P-CNT	O	Power supply ON/OFF control. ("H": Power ON)
90	XTSBY	O	IC standby. (CXA2523AR) "L": Standby.
91	OP-CNT	O	Power supply control for PICKUP. ("L": ON)
92	OPMUTE	O	Laser power MUTE. ("L": MUTE / "H": ON)
93	XLAT2	O	Chip strobe output pin for LCD.
94	RECP	O	Laser power switch control. ("H": record power)
95	CHCNT	–	Not used.
96	OWH-CNT	O	Head motor drive control. ("H" at drive)
97	RECM1	O	Used for REC driver control signal 1.
98	RECM2	O	Used for REC driver control signal 2.
99	HUP	O	Overwrite head UP output. ("H": UP, "L": DOWN)
100	HDN	O	Overwrite head DOWN output. ("L": UP, "H": DOWN)

IC, CXD2660GA

Pin No.	Pin Name	I/O	Description
1	VDC0	–	Power supply 1.8V.
2~5	MNT0~MNT3	O	Monitor output pin.
6	SWDT	I	Data input pin for micro-processor serial interface.
7	SCLK	I	Shift clock input pin for micro-processor serial interface.
8	XLAT	I	Latch input pin for micro-processor serial interface. Shut down: Latch.
9	VSC0	–	GND.
10	SRDT	O	Data output pin for micro-processor serial interface.
11	SENS	O	Output internal status according to micro-processor serial interface address.
12	XRST	I	Reset input pin. "L": Reset.
13	SQSY	O	Disc sub-code Q synchronize / ADIP synchronize output.
14	DQSY	O	When source of the digital in is set to CD or MD, output sub-code Q synchronize of UbitCD or MD format.
15	RECP	I	Laser power switching input pin. "H": Record power. 'L": Playback power.
16	XINT	O	Intrusion demand output pin. "L" setting when intrusion demand status is generated.
17	TX	I	Record data output enable signal input pin. "H": Enable.
18	VDIO0	–	Power supply 2.5V.
19	OSCI	I	Crystal oscillator circuit input pin.
20	OSCO	O	Crystal oscillator circuit output pin. (OSCI inverted
21	VSIO0	–	GND.
22~29	NC	–	Not connected.
30	VSCI	–	GND.
31	XTSL	I	Switch input frequency of OSCI pin. Connected to "H": 512Fs (22.5792MHz), "L": 1024Fs (45.1584M
32	TST3	–	Connected to GND.
33	DIN1	I	Input digital audio interface signal.
34	DOUT	O	Output digital audio interface signal. (Not used.)
35	DT72	–	Not used.
36,37	VDC1, VDC2	–	Power supply 1.8V.
38	DATAI	–	Not used.
39	LRCKI	–	Not used.
40	XBCKI	–	Not used.
41	ADDT	I	Analog record input pin. (Connected to external A/D
42	DADT	O	REC monitor output pin / Output decode audio data
43	LRCK	O	Output LRCK (44.1kHz) to external audio block.
44	VSC2	–	GND.
45	XBCK	O	Output bit clock (2.8224MHz) to external audio blo
46	FS256	O	Output 256Fs (11.2896MHz).
47	A03	O	Output address for external DRAM. (Not used.)
48	A04	O	Output address for external DRAM. (Not used.)
49	A02	O	Output address for external DRAM. (Not used.)

Pin No.	Pin Name	I/O	Description
91	ADRT	I	Input maximum voltage of A/D converter operation range.
92	AVD2	–	Power supply 2.5V
93	AVS2	–	GND.
94	ADRB	I	Input minimum voltage of A/D converter operation range. (Connected to GND)
95	SE	I	Input sled error signal.
96	TE	I	Input tracking error signal.
97	DCHG	I	Connected to the power supply of low impedance. (Connected to 2.5V power supply)
98	APC	I	Input error signal for laser digital APC. (Connected to 2.5V power supply)
99	ADFG	I	Input ADIP binary data FM signal (22.051kHz ± 1kHz).
100	VDIO2	–	Power supply 2.5V
101	VSIO2	–	GND.
102	FOCNT	O	Current setting output pin for CXA2523AR.
103	XLRF	O	Latch output pin for CXA2523AR control. Shut down: Latch.
104	CKRF	O	Shift clock output pin for CXA2523AR control.
105	DTRF	O	Data output pin for CXA2523AR control.
106	APCREF	O	Reference PWM output pin for laser APC.
107	LDDR	O	PWM output for laser digital APC. (Not used)
VSC2	–	Power supply 1.8V	108
TRDR	O	Tracking servo drive PWM output (–).	109
TFDR	O	Tracking servo drive PWM output (+).	110
FFDR	O	Focus servo drive PWM output (–).	111
FRDR	O	Focus servo drive PWM output (–).	112
FS4	O	Output 4Fs (176.4kHz).	113
SRDR	O	Sled servo drive PWM output (–). (Not used)	114
SFDR	O	Sled servo drive PWM output (+). (Not used)	115
VSC4	–	GND.	116
SPRD	O	Spindle servo drive PWM output. (PWM (–) or polarity)	117
SPFD	O	Spindle servo drive PWM output. (PWM (+) or PWM absolute value)	118
FGIN	I	Spindle CAV servo FG input.	119
TEST 1	I	Test pin. (Connected to GND)	120
TEST 2	I	Test pin. (Connected to GND)	121
TEST 3	I	Test pin. (Connected to GND)	122
EFMO	O	Output "L" at playback, EFM (encode data) at recording.	123
SPVS	–	Not used.	124
VDIO3	–	Power supply 2.5V.	125
VSIO3	–	GND.	126
SPDU	–	Not used.	127
SPDV	–	Not used.	128
SPDW	–	Not used.	129
SPCU	–	Not used.	130
SPCV	–	Not used.	131

Pin No.	Pin Name	I/O	Description
132	SPCW	–	Not used.
133	SLDU	–	Not used.
134	SLDV	–	Not used.
135	SLDW	–	Not used.
136	VDC5	–	Power supply 1.8V
137	VSC5	–	GND.
138	SLCU	–	Not used.
139	SLCV	–	Not used.
140	SLCW	–	Not used.
141	SLVS	–	Not used.
142	BYPS	–	Not used.
143	VSS	–	GND.
144	VDD	–	Power supply 2.5V.
145	VSS	–	GND.
146	VDD	–	Power supply 2.5V.
147	TST8	–	Not used.
148~168	NC	–	Not connected.

IC, CXA2523AR

Pin No.	Pin Name	I/O	Description
1	I	I	Input "I" RF signal converted to I-V.
2	J	I	Input "J" RF signal converted to I-V.
3	VC	O	Output voltage for VCC/2.
4	A	I	Input current for main beam servo signal A.
5	B	I	Input current for main beam servo signal B.
6	C	I	Input currentt for main beam servo signal C.
7	D	I	Input current for main beam servo signal D.
8	E	I	Input current for side beam servo signal E.
		I	Input beam spectrum monitor signal.
		O	Output laser APC.
		I	Input reference voltage for laser power setting.
		–	GND.
		I	Temperature sensor connection pin. (Not used)
		I	Temperature sensor connection pin. Output reference voltage. (Not used)
		I	Input micro-processor serial interface data.
		I	Input micro-processor serial interface shift clock.
		I	Input micro-processor serial interface latch. "L": Latch.
		O	PD
		11	APC
		12	APCREF
		13	GND
		14	TEMPI
		15	TEMPR
		16	SWDT
		17	SCLK
		18	XLAT

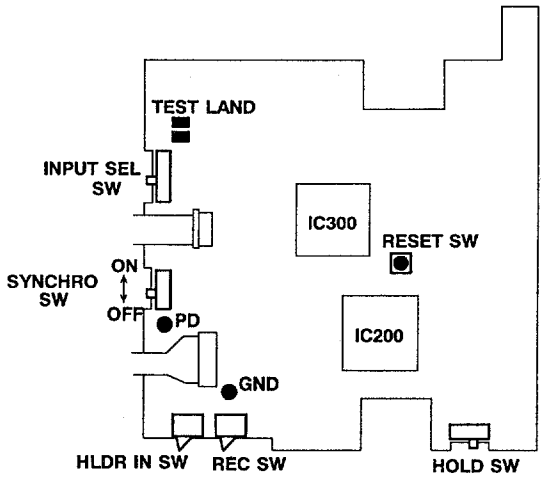
Pin No.	Pin Name	I/O	Description
19	XSTBY	I	Standby setting pin. "H": Normal mode, "L": Standby.
20	FOCNT	I	Internal current setting pin.
21	VREF	O	Output reference voltage. (Not used)
22	EQADJ	I/O	EQ central frequency setting pin.
23	3TADJ	I/O	BPF3T central frequency setting pin.
24	VCC	–	Power supply pin.
25	WBLADJ	I/O	BPF22 central frequency setting pin.
26	TE	O	Output tracking error signal.
27	CSLED	–	LPF capacitor connection pin for SLED error signal.
28	SE	O	Output SLED error signal.
29	ADFG	O	Output ADIP FM signal.
30	ADIN	I	Input ADIP signal comparator.
31	ADAGC	–	ADIPAGC capacitor connection pin.
32	ADFG	O	Output ADIP2 binary data signal.
33	AUX	O	13 output / Output temperature signal. Switched by serial command.
34	FE	O	Output focus error signal.
35	ABCD	O	Output beam spectrum signal for main beam servo detector.
36	BOTM	O	Output bottom hold signal for RF/ABCD.
37	PEAK	O	Output peak hold signal for RF/ABCD.
38	RF	O	RF equalizer output pin.
39	RF AGC	–	RFAGC capacitor connection pin.
40	AGCI	I	RFAGC input pin.
41	COMPO	O	User comparator output pin. (Not used)
42	COMPP	I	User comparator non-inverted input pin. (Not used)
43	ADDC	I/O	Capacitor connection pin for ADIP amplifier on return circuit.
44	OPO	O	Output pin for user operational amplifier. (Not used)
45	OPN	I	Non-inverted input pin for user operational amplifier. (Not used)
46	RFO	O	RF amplifier output pin. Check point for eye pattern.
47	MORFI	I	Input pin where Groove RF signal is AC coupled.
48	MORFO	O	Output pin for Groove RF signal.

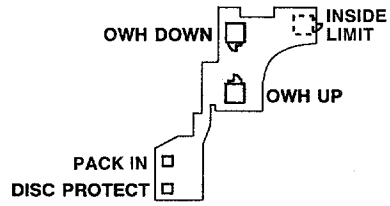
TEST MODE

Test Mode and Adjustment Mode

TEST MODE has 2 types: Test Mode that checks operation and Adjustment Mode.
These modes are displayed by LCDs of the main unit and remote controller.
The keys of the main unit and remote controller can control shifts between operations.

* Only KEY HOLD of remote controller can function while Test Mode is on.





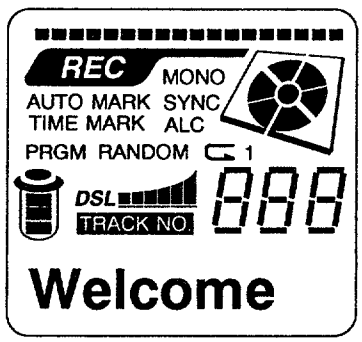
Test Mode

Note When Handling Discs

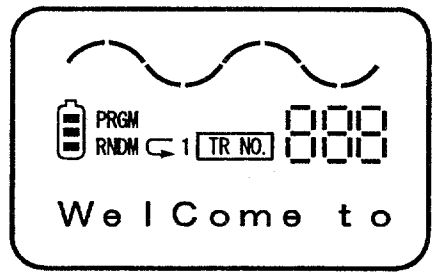
In Test and Adjustment Modes, "HOLD" switch of the main unit distinguishes discs.
When insert a disc, check the "HOLD" switch.

PIT disc (e.g. TEST DISC TGYS-1) : Turn on "HOLD" switch of the main unit
MO disc (fully recorded MDW-74) : Turn off "HOLD' switch of the main unit

1. Start and Cancel Test Mode
   1) Starting Test Mode
      There are 2 ways to start Test Mode.
      a. Press "REC/EDIT" key and "B-SKIP" key together, and then press "RESET" (to start Test Mode without removing the exterior).
      b. Switch off "SYNCHRO" and short the testland of the main circuit board. Then press "RESET".
      Once Test Mode is started, all LCDs will be turned on to display [Welcome To Mini Disk World].



LCD Display of the main unit



LCD Display of remote controller

   2) Cancelling Test Mode
      a. Press "RESET" key.
      b. Plug off AC plug and turn off the power.

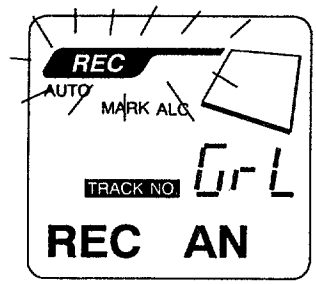
Caution

* Ignore mechanism failure during Test Mode operation. If any operation failures were detected, plug off the power supply.
* No replay or record while Test Mode is on.
* Do not insert a disc when OWH (Over Write Head) is lowered.

2. Remote controller LCD Display
   Once Test Mode is started, all LCD of both main unit and remote controller will be turned on.

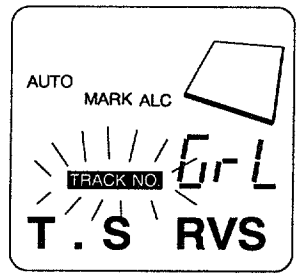
3. Audio Output Check
   It checks playback audio circuit (DAC, HP AMP).
   After Test Mode was started, 1KHz, -32.4dbv (24mV) signal is output from PHONE OUT when all LCD displays turned on.

4. REC Monitor Check
   Press "STOP" key to turn off LCD display and turn on [SV OFF] display.
   It checks REC audio circuit (MIC/LINE AMP, ADC).
   Input digital/analog source signals when [SV OFF] display is on, and press "REC" key to check the monitor sound. Then LCD displays "REC" to indicate that the signals are inputted.



5. Sledding Operation Check
   It checks the Pick-Up sledding operation when [SV OFF] display is on.
   When the Pick-Up is at the most internal circumference, LCD of the main unit displays [TRACK NO].

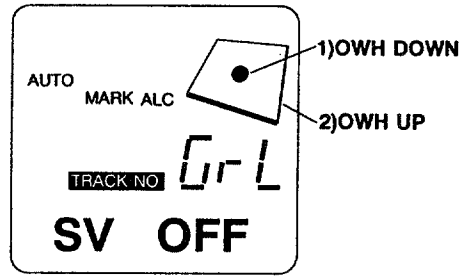
   * Press "F-SKIP" key to shift the Pick-Up to the external circumference. Display [T.S FWD]
   * Press "B-SKIP" key to shift the Pick-Up to the internal circumference. Display [T.S RVS]



6. OWH (Over Write Head) Operation Check
   It checks the up-down movement of OWH when [SV OFF] display is on.

   1) DOWN DETECT
      Press "ENTER" key to lower down OWH and display DISC center.

   2) UP DETECT
      Press "SEARCH" key to raise up OWH and display DISC outline.



Caution

* Do not lower down OWH when insert a high-reflection disc.
* If insert a disc with OWH lowered, it may result in bending OWH.

7. Various Switch Operation Check
   ON/OFF condition (condition of switch contact) of various switches of the main unit and the mechanism can be checked on the LCD Display on the main unit.
   Press "STOP" key to turn off LCD displays and turn on [SV OFF] display.

   * Main unit LCD Display

   1) HOLDER IN
      Display [MARK] of TIME MARK, once the top panel is closed (switch on "HLDR IN").

   2) HOLD
      Display Battery outline, once the "HOLD" switch on the main unit is turned on.

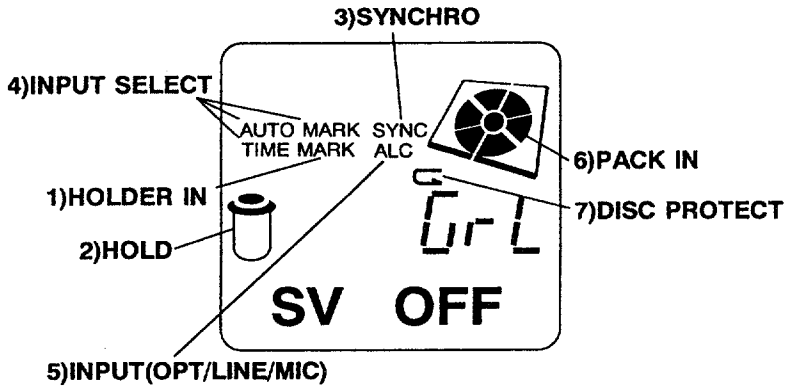
   3) SYNCHRO
      Display [SYNC] , once "SYNCHRO" switch is turned on.

   4) INPUT SELECT
      LCD display of the main unit will be switched over depending on the position of "INPUT SELECT" switch.
      * MIC HIGH —> Display [TIME].
      * MIC LOW —> Display [MARK] of AUTO MARK.
      * LINE —> Display [AUTO].

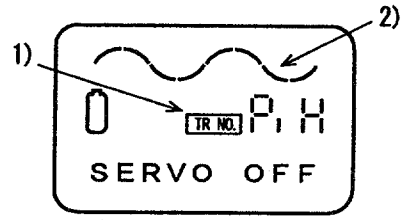
   5) INPUT (OPT/LINE/MIC)
      When Optical Plug is inserted, [ALC] display will turn off.

   6) PACK IN
      When the disc is inserted, disc fans will turn on.

7) DISC PROTECT
When a recordable MO disc (the write-protect tab is blocked) is inserted, it displays REPEAT.

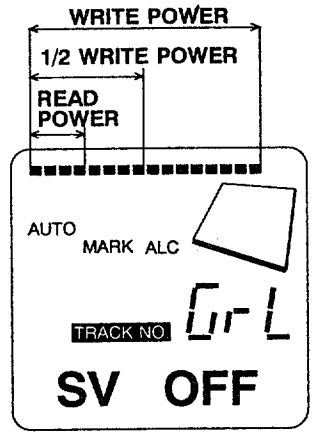


* Remote controller LCD Display
1) Displays [TRNO.] when "HOLD" switch on the main unit is on.
However, not when "HOLD" switch on the remote controller is on.
2) Displays [~ ~] when the top panel is closed (turn on "HLDR IN" switch).



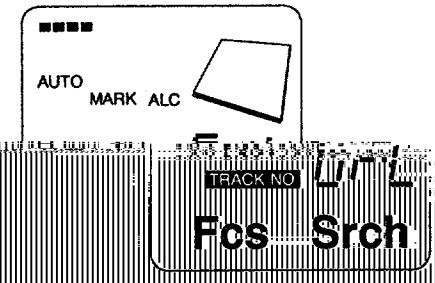
8. Laser Output Check
Press "DSL" key when [SV OFF] display is on, to make the Pick-Up lasers radiate. The level of luminosity will change every time "DSL" key is pressed. The level meter of LCD displays the lasers' luminosity level.

0FF → READ POWER → 1/2 WRITE POWER → WRITE POWER



9. Servo Operation Check
1) Focus Search and Spindle Kick Check
Press "PLAY" key without no disc inside, to visually check the Focus Search and Spindle Kick. It displays [Fcs Srch].

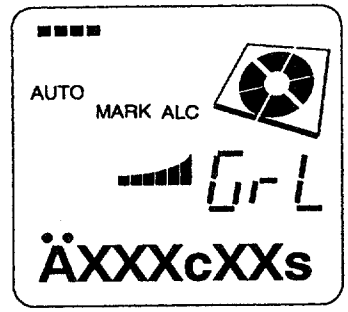
* PIT disc (TEST DISC TGYS-1) : Turn on "HOLD" on the main unit.
MO disc (MDW 74) : Turn off "HOLD" on the main unit.



2) Focus Servo On
Insert a disc and press "PLAY" key to set focus and display [Focus ON].
Insert a MO disc and press "ENTER" key to lower OWH down. If "PLAY" key is pressed in this condition, it will not set focus.

3) All Servo On
Press "MODE" key with focus servo on to turn on tracking and sledding servo, and lock spindle servo. Then, LCD on the remote controller will display disc addresses.

XXXc : cluster
XXs : sector



4) Switching between CAV/CLV of Spindle Servo
Spindle servo is operated by CAV servo when all servos are on.
Press "MULTI JOG" key to switch from CAV servo to CLV servo.
However, it cannot be switched back from CLV servo to CAV when all servos are on.
In order to start CAV servo, press "STOP" key to terminate the operation and turn all servos back on.

5) Track Jump
Press "MULTI JOG" key after setting all servo on, to jump tracks.
* "+" direction to jump tracks in FWD
* "–" direction to jump tracks in RVS

10. Adjustment Values and Error Rate Check
Press "DISP" key in each operation to display the following values on LCD.

1) Adjustment Value Check
Press "DISP" key when [SV OFF] display is on, to check temperature preset value, IVR value, EF Balance value, Focus Gain, Tracking / Sledding Gain.

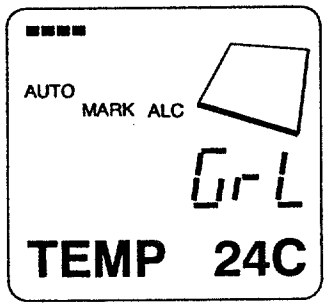
SV OFF
↓
TEMP ＊＊C
↓
iv＊＊ ef＊＊
↓
Gf＊＊ ts＊＊

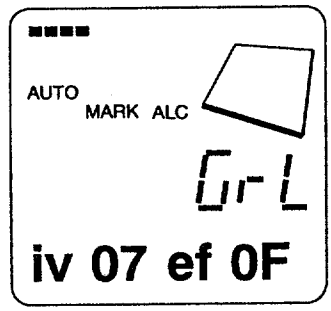
Press the [DISP] key to switch adjustment values.

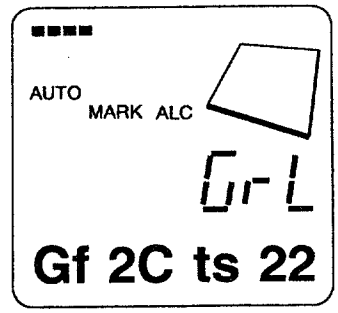
a) Temperature (the internal temperature of the main unit is displayed.)

b) IVR and EF balance values

c) Focus Gain and Tracking/Sled Gain value







* Default Value
a) Temperature Display
Same as the room temperature (immediately after turning on the power)

PIT disc adjustment value
Turn on "HOLD" switch, display [Pi H].
iv : 14 ~ 19 ef : 09 ~ 15
Gf : 40 ~ 80 ts : 15 ~ 40

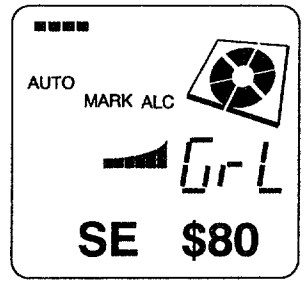
MO disc adjustment value
Turn off "HOLD" switch, display [Gr L].
iv : 05 ~ 0A ef : 09 ~ 15
Gf : 30 ~ 70 ts : 15 ~ 40

2) EF Balance Value Check
Insert a disc and press "DISP" key with [Focus ON!] display on, to check EF Balance DC Offset value.

Focus ON! ←
↓
SE $ * * ←

SLED ERROR
(EF balance)

centre value
SE $80

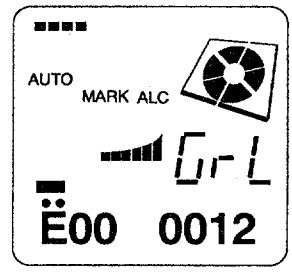


3) Error Rate Check
Press "DISP" key with All Servo On, to display Error Rate.
It displays the error rate of recorded discs, which can be used to check the recording condition of discs.

* * * c * * s ←
↓
Er * * ΔΔΔΔ ←

Address

Error rate
* * : C2 Error
ΔΔΔΔ : C1 Error



a) PIT disc (TGYS-1)
1. Turn on "KEY HOLD" switch and display [PiH].
2. Shift Pick-Up to the slightly more external position than the most inner circumference.
3. Press "PLAY" key and then "MODE" key to set all servo on and adjust address at approximately 600s00.
4. Press "DISP" key to check that C1 error is below [0030].

b) MO disc (MDW-74)
1. Turn off "KEY HOLD" switch to display [GrL].
2. Set all servo on and adjust address at approximately 600s00.
3. Check that C1 error is below [0030].

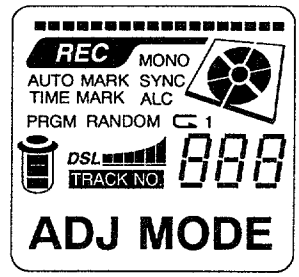
c) Record/Playback Error Rate Check
1. Turn off "KEY HOLD" switch to display [GrL].
2. Insert a MO disc and press "F-SKIP" key to shift the Pick-Up to the slightly more external position than the most inner circumference.
3. Press "ENTER" key to lower down OWH.
4. Press "REC/EDIT" key to display [REC AN].
5. Press "PLAY" key to display [Fcs ON!].
6. Press "MODE" —> "REC" keys to check that recording starts at 600c.
7. Record for 15 seconds and press "STOP".
8. Press "SEARCH" key to raise up OWH.
9. Press "PLAY" —> "MODE" keys to check that the address is set at approximately 600s00.
10. Press "DISP" key to check that C1 error is below [0030].

Adjustment Mode

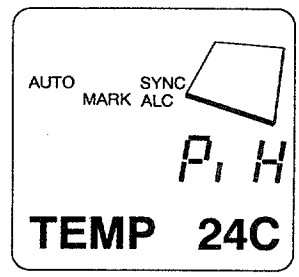
1. Start and Cancel Adjustment Mode
   1) Starting Adjustment Mode
      Turn on "SYNCHRO" switch and short the testland of the main circuit board.
      Then press "RESET" key. Once Adjustment Mode is started, LCD will be all turned on to display [ADJ MODE].

   2) Cancelling Adjustment Mode
      * Press "RESET" key.
      * Plug off AC plug and turn off the power.

   * If adjustment is not complete, it displays [NO ADJ!].



2. Temperature Compensation
   Press "STOP" key to display [SV OFF].
   Press "DISP" key once to display [TEMP **C].
   Use "ENTER", "SEARCH" keys to adjust the displayed temperature value to the room temperature.



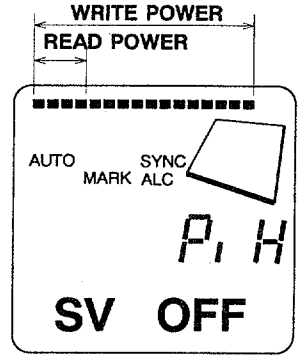
Note
* Make this adjustment immediately after turning on the power.
* Make sure that the temperature of the circuit board is same as the room temperature.

3. Laser Power
   It adjusts the laser power of Read/Write.
   Press "STOP" key to display [SV OFF].

Caution
* Do not make this adjustment with a disc inside, as it may damage the disc.

Procedure
* READ POWER ADJUSTMENT
  Press "DSL" key once to increase one grade of a level meter.
  Check the voltage between Test Points PD-GND with a digital multi meter.
  Use "ENTER", "SEARCH" keys to set digital multi meter display at 105±6mV.

* WRITE POWER ADJUSTMENT
  Press "DSL" key twice to increase the grade of the level meter to the maximum. Check the voltage between Test Points PD-GND with a digital multi meter. Use "ENTER", "SEARCH" keys to set digital multi meter display at 810±6mV.



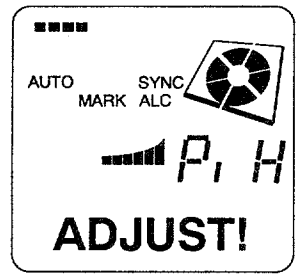
4. Automatic Adjustment Mode
   This mode automatically adjusts servos and maintains the adjustment data in EEPROM.
   Recommended making a new adjustment after every replacement of Pick-Up, microcomputer or EEPROM, and mechanism repair.

Caution
* If a disc had any stains or scars on, the adjustment may not be completed. Use a new clean disc for adjustment.
* Always place the machine with its cassette cover upward for adjustment.
* Adjustment must be done on both PIT disc and MO disc. Otherwise it displays[NO ADJUST!]and stops operating.

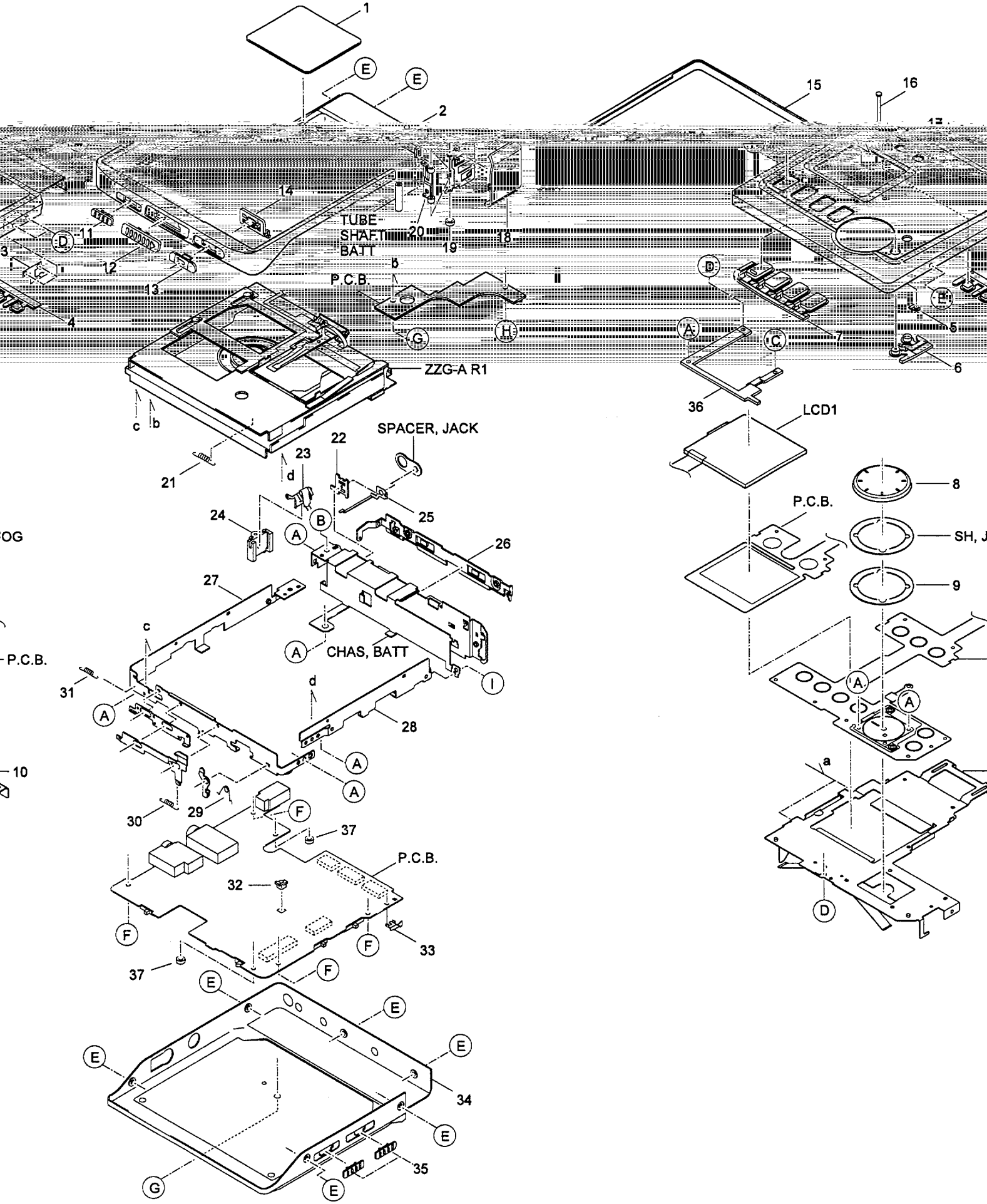
* PIT disc (test disc TGYS-1)
* MO disc (fully recorded MDW-74 or equivalent)

Procedure
1. Insert a PIT disc and press "PLAY" key.
2. LCD displays [ADJUST!] and starts automatic adjustment.
3. Once the LCD display says [COMPLETE], the adjustment is done.
4. Press "B-SKIP" key and get [TRACK NO.] on LCD display.
5. Insert a MO disc and press "PLAY" key.
6. LCD displays [ADJUST!] and starts automatic adjustment.
7. Once the LCD display says [COMPLETE], the adjustment is done.

* If LCD displays [SERVO OFF], the adjustment is incomplete.



MECHANICAL EXPLODED VIEW 1 / 1

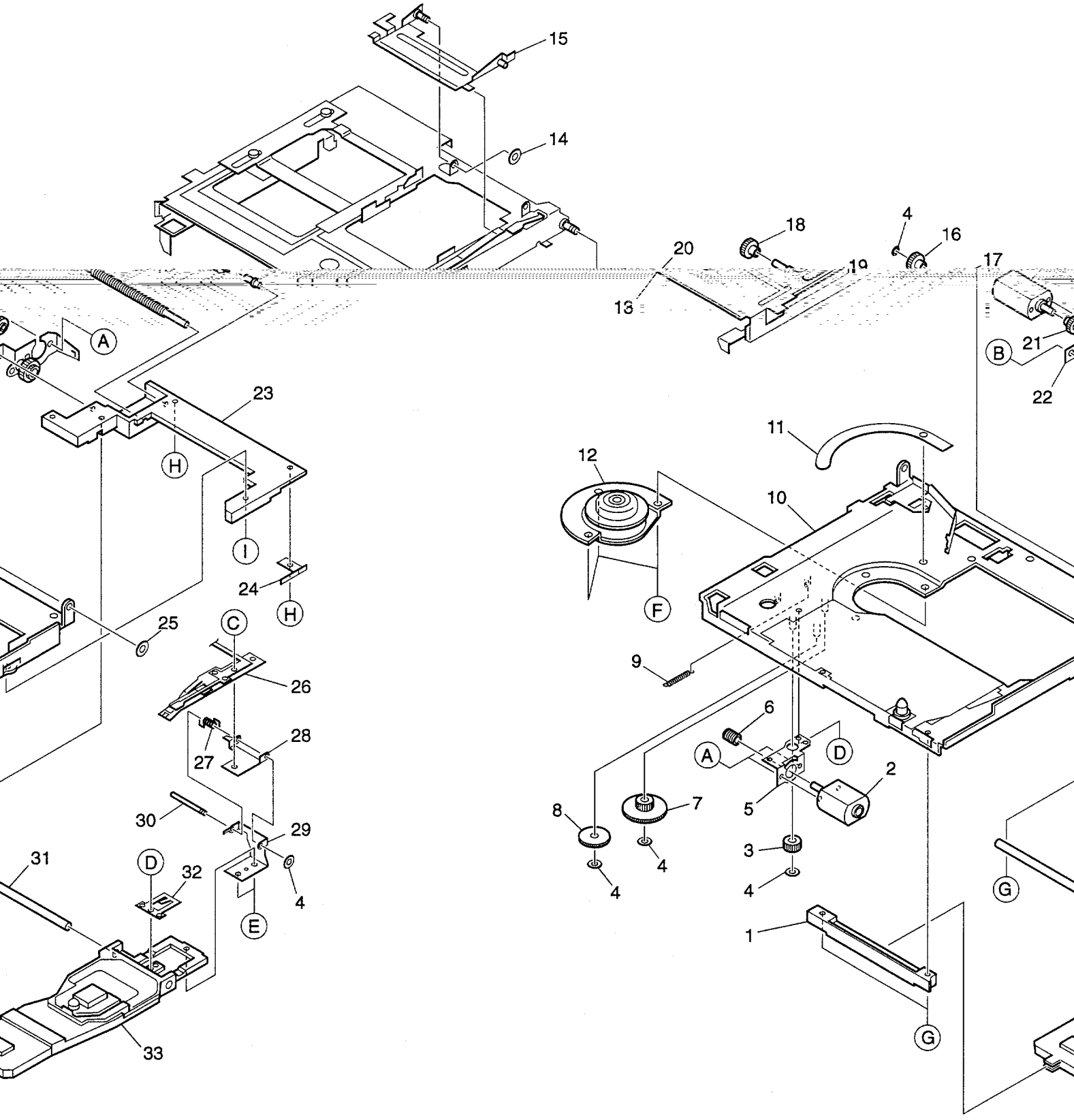


MECHANICAL PARTS LIST 1 / 1

If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8A-HM1-006-210		WINDOW,DISP<EXCEPT AK,AEZ>
1	8A-HM1-061-010		WINDOW,DISP N<AK,[N]AEZ>
1	8A-HM1-062-010		WINDOW,DISP G<[G]AEZ>
2	8A-HM1-001-110		PANEL ASSY,TOP<EXCEPT AU,AK,AEZ>
2	8A-HM1-041-010		PANEL ASSY,TOP N<AK,[N]AEZ>
2	8A-HM1-043-010		PANEL ASSY,TOP G<[G]AEZ>
2	8A-HM1-045-010		PANEL ASSY,TOP U<AU>
3	8A-HM1-229-010		HLDR,PANEL
4	8A-HM1-008-010		KEY,CONT SUB
5	8A-HM1-011-010		LENS,REC
6	8A-HM1-009-010		KEY,SEARCH
7	8A-HM1-007-010		KEY,CONT MAIN
8	8A-HM1-010-010		KNOB,RTRY JOG
9	8A-HM1-243-010		PLATE,JOG
10	8A-HM1-226-010		HLDR ASSY,TOP
11	8A-HM1-015-010		KNOB,SL HOLD
12	8A-HM1-012-010		KNOB,SL EJECT
13	8A-HM1-013-010		KNOB,SL REC
14	8A-HM1-014-210		KNOB,LEVER REC
15	8A-HM1-003-110		FRAME,CENTER<EXCEPT AK,AEZ>
15	8A-HM1-026-010		FRAME,CENTER EZ<AK,AEZ>
16	8A-HM1-235-110		SHAFT,HINGE BATT
17	8A-HM1-234-110		HINGE,BATT
18	8A-HM1-004-110		LID,BATT<EXCEPT AK,AEZ>
18	8A-HM1-056-010		LID,BATT<AK,[N]AEZ>
18	8A-HM1-057-010		LID,BATT<[G]AEZ>
23	8A-HM1-236-110		BAT-CONTACT,+
24	8A-HM1-238-010		COVER, BATT +
25	8A-HM1-233-010		BAT-CONTACT,BOX
26	8A-HM1-203-010		HINGE,PANEL TOP
27	8A-HM1-206-210		FRAME ASSY,FR
28	8A-HM1-216-110		FRAME,R
29	8A-HM1-244-110		SPR-T,OPEN
30	8Z-HM4-230-010		SPR-E,EJECT
31	8A-HM1-250-010		SPR-E,LOCK B
32	8A-HM1-247-110		HLDR,PWB
33	8A-HM1-237-010		BAT-CONTACT,-
34	8A-HM1-031-010		PANEL,BOT HC<AHR,AHC,AHK>
34	8A-HM1-034-010		PANEL,BOT EZ N<AK,[N]AEZ>
34	8A-HM1-033-010		PANEL,BOT U<AU>
34	8A-HM1-035-010		PANEL,BOT EZ G<[G]AEZ>
35	8A-HM1-016-010		KNOB,SL SEL<EXCEPT AK,AEZ>
35	8A-HM1-066-010		KNOB,SL SEL N<AK,[N]AEZ>
35	8A-HM1-067-010		KNOB,SL SEL G<[G]AEZ>
36	8A-HM1-225-010		HLDR LCD
37	8A-HM1-272-010		W-L,1.7-3.6-0.05 W/ADH
A	87-HM1-254-010		S-SCREW,1.4-1.4CR
B	87-078-052-010		S-SCREW+1.4-3.5HL(B)
C	87-HM1-242-010		S-SCREW,1.4-2.0CR
D	8A-HM1-291-010		SCREW,1.4-1.0CR
E	87-HM1-243-010		S-SCREW,1.4-1.4CRNL
F	87-067-746-010		SCREW,M 1.4-2(H0.5)

MD MECHANISM EXPLODED VIEW 1 / 1



MD MECHANISM PARTS LIST 1 / 1

If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8Z-ZGA-226-010		HLDR,P.U.GUIDE S
2	87-A91-016-010		MOT,LA8-388L
3	88-ZG2-228-010		GEAR,A OWH
4	87-067-569-010		POLY WASHER 0.83-2.5-0.25
5	88-ZG2-221-110		HLDR,MOT OWH
6	88-ZG2-227-010		GEAR,MOT OWH
7	88-ZG2-230-010		GEAR,C OWH
8	88-ZG2-229-010		GEAR,B OWH
9	88-ZG2-240-010		SPR-E,E-LOCK
10	8Z-ZGA-201-010		CHAS,ASSY,R
11	8Z-ZGA-254-010		SH,SPINDLE
12	87-A91-014-010		MOT,SSM01C10A
13	8Z-ZGA-216-010		HLDR ASSY,CTRG
14	87-B10-152-010		W-P,0.83-2.0-0.25 C
15	87-ZG1-262-010		LEVER ASSY,KICK OWH
16	8Z-ZGA-233-010		GEAR,B SL
17	8Z-ZGA-214-010		SHAFT,GEAR SL B
18	8Z-ZGA-234-010		GEAR,C SL
19	8Z-ZGA-236-010		SHAFT,LEAD
20	87-A91-493-010		MOT,PNN7GE08KD
21	8Z-ZGA-231-010		GEAR,MOT SL
22	8Z-ZGA-237-010		HLDR ASSY,MOT SL
23	8Z-ZGA-225-010		HLDR,P.U.GUIDE M
24	8Z-ZGA-241-010		SPR-P,LS GUIDE
25	87-078-123-010		PW,1.1-2.5-0.3C
26	87-A91-467-010		HEAD,RF328-74 E
27	87-ZG1-244-010		SPR-T,OWH
28	88-ZG2-222-210		HLDR,PU
29	87-ZG1-242-110		HLDR,OWH
30	87-ZG1-243-010		SHAFT,OWH
31	8Z-ZGA-235-010		SHAFT,GUIDE M
32	88-ZG2-243-110		SPR-P,RACK
33	87-A90-956-010		PICKUP,KMS-280A
A	87-078-120-010		1V+1.2-1.5
B	88-ZG6-224-010		S-SCREW,VBT+1.4-3
C	87-231-501-310		PRECISION SCREW, Q+1.4-1.6
D	87-263-500-310		SCREW V+1.4-1.4
E	88-ZG2-255-010		S-SCREW,+1.7-1.6 AZIMUTH
F	87-067-393-010		SCREW +1.4-1.4
G	88-ZG2-256-010		S-SCREW,+1.4-3.5
H	87-067-511-010		SCREW,V+1.4-2 BK
I	88-ZG2-257-010		S-SCREW,+1.4-3.1

ACCESSORIES / PACKAGE LIST

If can't understand for Description please kindly refer to " REFERENCE NAME LIST ".

REF. NO.		PART NO.	KANRI NO.	DESCRIPTION
⚠	1	87-A90-312-010		PLUG,CONVERSION WTN-1157R1<AHR>
⚠	2	87-B30-143-110		AC ADAPTOR,AC-D401E NC<AEZ>
⚠	2	87-B30-144-010		AC ADAPTOR,AC-D401K NC<AHK,AK>
⚠	2	87-B30-159-010		AC ADAPTOR,AC-D401HR<AHR>
⚠	2	87-B30-177-010		AC ADAPTOR,AC-D401HC<AHC>
⚠	2	87-B30-142-010		AC ADAPTOR,AC-D401U NC<AU>
	3	87-B30-111-010		BAT,LIB-902
	4	87-B30-297-010		HEADPHONE,HP-M031 H<EXCEPT AU>
	4	87-B30-248-010		HEADPHONE,HP-M038<AU>
	5	8A-HM1-904-010		IB,HC (ECK)I<AHC>
	5	8A-HM1-905-010		IB,HR (ECA)I<AHR,AHK>
	5	8A-HM1-907-010		IB,EZ (EGF)I<AK,AEZ>
	5	8A-HM1-908-010		IB,EZ (SID)I<AEZ>
	5	8A-HM1-909-010		IB,EZ (PHNCZ)I<AEZ>
	5	8A-HM1-903-010		IB,U (ESF)I<AU>
	6	8A-HM1-951-010		BOX ASSY,BAT AHM-1<AHC,AHR,AHK,AU>
	6	8A-HM1-957-010		BOX ASSY,BAT AHM-1 N<AK,[N]AEZ>
	6	8A-HM1-959-010		BOX ASSY,BAT AHM-1 G<[G]AEZ>
	7	8A-HM3-952-010		BAG,CARRING
	8	8Z-HM4-605-010		RC UNIT,RC-HX30<AHC,AHR,AHK,[G]AEZ,AU>
	8	8Z-HM4-608-010		RC UNIT,RC-HX30 N<AK,[N]AEZ>
	9	87-B30-231-010		CABLE,OP-W2S
	10	8A-HM1-612-010		ADAPTOR,DC-550A<AU>
	11	86-YK1-001-110		ADAPTOR,CAP-6<AU>

REFERENCE NAME LIST

ELECTRICAL SECTION

DESCRIPTION	REFERENCE NAME
ANT	ANTENNAS
C-	CHIP
C-CAP	CAP, CHIP
C-CAP TN	CAP, CHIP TANTALUM
C-COIL	COIL, CHIP
C-DI	DIODE, CHIP
C-DIODE	DIODE, CHIP
C-FET	FET, CHIP
C-FOTR	FILTER, CHIP
C-JACK	JACK, CHIP

MECHANICAL SECTION

DESCRIPTION	REFERENCE NAME
ADHESHIVE	SHEET ADHESHIVE
AZ	AZIMUTH
BAR-ANT	BAR-ANTENNA
BAT	BATTERY
BATT	BATTERY
BRG	BEARING
BTN	BUTTON
CAB	CABINET
CASS	CASSETTE
CHAS	CHASSIS